DRAINAGE REPORT

for

189 MAY ST, WORCESTER, MA

Job #348-1876 Client #3368

September 14, 2021

THOMPSON-LISTON ASSOCIATES, INC.

Professional Engineers Professional Land Surveyors Erosion Control Specialists

51 Main Street, Post Office Box 570 Boy Iston, Massachusetts 01505-0570 Telephone 508-869-6151 FAX 508-869-6842 www.thompsonliston.com





AMM 9/14/21





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Boylston, Massachusetts 01505-0570
Telephone 508-869-6151 FAX 508-869-6342
www.thompsonliston.com

Drainage Report

New England Rehabilitation Services of Central Massachusetts, Inc. Proposed redevelopment of the site at 189 May Street Worcester, Massachusetts

September 14, 2021

Project Description

The site is located on the south-westerly side of May Street, south-easterly of Fairlawn Drive and north-westerly of Hadwen Arboretum at Clark University. The property is presently owned by New England Rehabilitation Services of Central Massachusetts, INC. It presently serves as a hospital.

The Applicant, New England Rehabilitation Services of Central Massachusetts, Inc., proposes to construct an addition onto the existing north wing of the hospital with associated ambulance access bay, walkway and entryway for pedestrian use, and several new islands and parking reconfiguration in order to allow for safe and efficient flow of vehicle and pedestrian traffic. On the southerly side of the site, additional landscaped area and walkways are proposed leading to an existing gazebo. On the westerly side of the site, existing pavement is proposed to be removed in order to plant additional grass.

This report compares the drainage conditions of the proposed development to the predevelopment conditions of the site. The predevelopment condition includes the most recent improvements that were made to the site in the 2004-2005 time frame, when the parking lot was expanded and .the drainage system was improved.

Soils on this site are categorized on the United States Department of Agriculture (USDA) Web Soil Survey soil maps as being "Paxton fine sandy loam" soils with 3 to 8 percent slopes in most areas and 8 to 15 percent slopes in remaining areas. In actuality, the geotechnical borings show an underlying soils with fines in the range of 15% to 40%. As with some other hilltop sites in the area, the glacial till in these situations is very dense, and with the high percentage of fines is highly expansive with frost. The site soils are unsuitable for any type of infiltration systems. For the purpose of the drainage study, we have categorized the soils as hydrologic soil group "C" soils based on the soil maps and properties of the Paxton soils.

Methodology

In order to evaluate the existing and proposed hydrologic conditions of the site, we have employed the HydroCADTM stormwater modeling software, which emulates the United States Department of Agriculture, Soil Conservation Service (SCS) hydrograph method as outlined in Technical Release 20 (1982). We have used the SCS modified soil cover complex method of evaluating cover conditions and underlying soil features in developing runoff curve numbers (RCN), and have determined Times of Concentration (ToC), using the methods described in the SCS's National Engineering Handbook, Section 4, Hydrology (1985). Each watershed with its Area, RCN and ToC, is described as a "Subcatchment" in HydroCADTM.

Drainage Report for Fairlawn Hospital 189 May Street, Worcester September 14, 2021 Page 2

HydroCAD™ uses the Storage-Indication method for routing flows from "Subcatchment" areas through "Reaches" and "Ponds." Reaches are overland flow paths, pipe segments, or stream segments. Ponds are areas that collect water, such as basins, ponds, or swales where outlet devices control outflow.

Rainfall was determined from the maps in the National Oceanic and Atmospheric Administration (NOAA), <u>ATLAS 14 Point Precipitation Frequency Estimates</u> for the locus. The SCS's Type III Rainfall Distribution is used for these calculations and is described in SCS <u>Technical Release 55</u> (1986). The 2-, 10-, 25- and 100-year return frequency storms were studied with 24-hour rainfalls of 3.14, 4.87, 5.95 and 7.61 inches respectively.

Design Points

The design points for this report consist of the northerly pond that the swale leads into, the slope that runs westerly before the start of the swale, the catch basin on the driveway near the entrance to the northerly parking, and the abutting easterly parking lot that collects runoff from the slope near the gazebo. These locations were chosen because they are locations where runoff from the site ends up and they can be compared for pre- and post-development.

Flows to the northerly pond are modeled as pond #1P in the pre- and post-development conditions. Flows to the westerly slope are modeled as Subcatchment 7 in the pre- and post-development conditions. Flows to the catch basin in the driveway are modeled as Pond 3 on the pre- and post-development conditions. Flows to the easterly abutting parking lot are modeled as Subcatchment 9 on the pre- and post-development conditions.

Calculation Summary and Comparison of Flows:

In all of the storms studied, the 2-, 10-, 25- and 100-year storms, the runoff leaving the site in the post-development condition will not exceed the peak runoff in the existing (pre-development) condition.

The following table compares the pre- and post-development flows at the Design Points:

Respectfully submitted,

THOMPSON-LISTON ASSOCIATES, INC.

Patrick .J. Healy, P.E.

Project Manager / Civil Engineer

Drainage Report for Fairlawn Hospital 189 May Street, Worcester September 14, 2021 Page 3

;	Runo	TABL off Summaries	E A for Storm Eve	nts
Design Point	2-YR	10-YR	25-YR	100-YR
1. Northerly	Pond			
Pond 1P pre	8.77 cfs	15.21 cfs	19.65 cfs	26.47 cfs
Pond 1P post	8.77	15.09	19.61	26.47
2. Catch Bas	in in Driveway			
Reach 9R pre	2.80 cfs	4.65 cfs	5.78 cfs	7.52 cfs
Reach 9R post	2.67	4.50	5.64	7.37
3. Abutting I	Easterly Lot			
Reach 10R pre	0.65 cfs	1.58 cfs	2.21 cfs	3.23 cfs
Reach 10R post 0.63		1.54	2.16	3.15
4. Westerly S	Slope			
Reach 7R pre	0.82 cfs	1.57 cfs	2.05 cfs	2.80 cfs
Reach 7R post	0.82	1.57	2.05	2.80





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Stormwater Standards Compliance Statement Fairlawn Hospital Addition and Renovation 189 May Street Worcester, Massachusetts

September 14, 2021

A portion of the existing building entrance canopy and paved areas will be removed and replace dwith a building addition that will serve as the new main entrance and ambulance entrance to the hospital, as well as new rooms on the upper floors. The renovations and expansion will not result in additional patient beds or uses, but will convert several multi-patient rooms, and new rooms to private or semi-private rooms. Portions of the lot will be redeveloped to construct the addition, relocate accessible parking spaces and walks, and improve emergency vehicle access. As a redevelopment project, the project will comply with the Massachusetts DEP Stormwater Standards only to the extent practicable, as described below. Where a particular Standard does not apply to the project, an explanation is provided. Each statement either describes compliance with those Standards that are applicable to the scope of work proposed.

STANDARD 1 – NO NEW UNTREATED DISCHARGES

Runoff from the site includes runoff from roofs, paved areas, and landscaped areas. Stormwater runoff from existing paved driveways and roofs currently runs off in four separate directions, which we evaluated and for which we designed mitigating measures to limit the postdevelopment runoff to or below the predevelopment levels. Much of the area of redevelopment flows to two drainage systems, to the existing parking lot drainage system toward an existing detention basin to the north, and to catch basins in the main driveway which connection downslope toward May street through easements on the adjacent property to the east. To the southeast and southwest some areas contribute overland flow to adjacent properties. In the proposed condition, the runoff from impervious driveways will generally slope and runoff it the same directions. The roof runoff of the new building addition and patient drop off canopy will be connected by pipes to the existing parking lot drainage system to the north. The piped drainage system will then be retrofitted to constrict the pipe leading out the existing surface detention basin, in order to avoid divert the discharge through a subsurface detention/infiltration BMP. Although there is a net increase of 7,013 sq. ft. of impervious area, the actual peak rate and volume of runoff will be less in the proposed condition. No new untreated discharges are proposed.

STANDARD 2 – PEAK RATE ATTENUATION

As described in the report and hydrologic calculations, the peak rate of runoff will be mitigated for the 2, 10, 25, and 100-year storms. so there is no contribution to off-site flooding.

STANDARD 3 – RECHARGE

Though the redevelopment results in a modest increase to impervious cover, and equivalent area of impervious parking lot will be removed on the west edge of the parking lot, so the project does not result in an increase in impervious cover. Soil types present on the site are identified as Paxton fine sandy loam, which would normally be classified as hydrologic group C soil. However, the soil borings in the area of development indicate dense glacial till with inordinate fine content, between

Stormwater Standards Compliance 189 May Street, Worcester, MA September 14, 2021 Page 2

25%-40% passing the #200 sieve. This type of soil is unsuitable for any type of infiltration systems whether open air or subsurface. As such, we will not be proposing any recharge.

STANDARD 4 – WATER QUALITY

Standard 4 is also based up on the amount of new impervious surfaces being created on a site. As stated in the prior section, no increase in the impervious cover is proposed by this project.

In this case, all runoff from the altered impervious parking area and walks will continue to be directed to deep sump catch basins and walks. Once small area of the fire lane will be collected into a trench drain with a sump, and will be piped around the ambulance bay. The roof runoff is considered clean and is not subject to the Standard 4 requirements.

STANDARD 5 – LUHPPLs

Site does not fall into this category.

STANDARD 6 – CRITICAL AREAS

Site is not in or near a critical area as defined in the DEP Stormwater Handbook.

STANDARD 7 – REDEVELOPMENT

As a redevelopment site, the modest increase in impervious cover is mitigated through the reduction of paved surface in another area of the site. The redevelopment of the site will represent an improvement in stormwater management in terms of reduction of the peak rate of flow through additional mitigation. In addition, there will be an O&M plan in place for improved long term water quality and protection of stormwater infrastructure.

STANDARD 8 - CONSTRUCTION PERIOD CONTROLS

An Erosion and Sedimentation Control Plan has been developed, and is shown on the plans. Details of the BMPs are shown on the Detail Sheet of the Site Plan.

STANDARD 9 – OPERATION AND MAINTENANCE PLAN

An Operation and Maintenance Program covering the construction period and post-construction period maintenance and inspection requirements of the proposed stormwater structures has been written and is included herewith.

STANDARD 10 – PROHIBITION OF ILLICIT DISCHARGES

Provisions will be made to prevent illicit non-stormwater discharges to waters of the Commonwealth. The owner is cognizant of the effects upon the environment of improper disposal of wastewater, process waste, raw materials, toxic and hazardous substances, oil and grease, and seeks to prevent damage to the environment. Such substances if present shall be stored in covered containers or within parked vehicles on the site and will not be exposed to rainfall. Spill kits will be stored on site and replenished as necessary to prevent the migration of potential contaminants.

Prepared by:

Patrick J. Healy, P.E.

THOMPSON-LISTON ASSOCIATES, INC



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals. This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Manual Ma

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new an redevelopment?	d
☑ Redevelopment	
Mix of New Development and Redevelopment	



CI	necklist (continued)
en	• Measures: Stormwater Standards require LID measures to be considered. Document what vironmentally sensitive design and LID Techniques were considered during the planning and design of project:
\square	No disturbance to any Wetland Resource Areas
	Site Design Practices (e.g. clustered development, reduced frontage setbacks)
Ø	Reduced Impervious Area (Redevelopment Only)
V	Minimizing disturbance to existing trees and shrubs
	LID Site Design Credit Requested:
	☐ Credit 1
	Credit 2
	☐ Credit 3
	Use of "country drainage" versus curb and gutter conveyance and pipe
	Bioretention Cells (includes Rain Gardens)
	Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
	Treebox Filter
	Water Quality Swale
	Grass Channel
	Green Roof
	Other (describe):
Sta	andard 1: No New Untreated Discharges
V	No new untreated discharges
	Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
\square	Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



CI	checklist (continued)			
Sta	tandard 2: Peak Rate Attenua	tion		
	and stormwater discharge is t	o a wetland subject to	located in land subject to coastal stor coastal flooding. poding increases during the 100-year 2	_
\square	development rates for the 2-y flooding increases during the	ear and 10-year 24-ho 100-year 24-hour stor	nt peak discharge rates do not exceed our storms. If evaluation shows that of m, calculations are also provided to sh eed pre-development rates for the 100	f-site now that
Sta	tandard 3: Recharge			
V	Soil Analysis provided.			
	Required Recharge Volume o	alculation provided.		
	Required Recharge volume re	educed through use of	the LID site Design Credits.	
] Sizing the infiltration, BMPs is	based on the followin	g method: Check the method used.	
	☐ Static ☐ Simple	e Dynamic	☐ Dynamic Field ¹	
	Runoff from all impervious are	eas at the site discharg	ging to the infiltration BMP.	
	Runoff from all impervious are are provided showing that the generate the required recharg	drainage area contrib	scharging to the infiltration BMP and outing runoff to the infiltration BMPs is	alculations sufficient to
	Recharge BMPs have been s	ized to infiltrate the Re	quired Recharge Volume.	
	Recharge BMPs have been s extent practicable for the follo	ized to infiltrate the Re wing reason:	equired Recharge Volume <i>only</i> to the r	naximum
	☑ Site is comprised solely o	f C and D soils and/or	bedrock at the land surface	
	M.G.L. c. 21E sites pursu	ant to 310 CMR 40.00	00	
	Solid Waste Landfill pursu	uant to 310 CMR 19.00	00	
:	 Project is otherwise subje practicable. 	ct to Stormwater Mana	agement Standards only to the maxim	um extent
	Calculations showing that the	infiltration BMPs will d	train in 72 hours are provided.	
	Property includes a M.G.L. c.	21E site or a solid was	ste landfill and a mounding analysis is	included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



 Standard 3: Recharge (continued) The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mou analysis is provided. Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetlar resource areas.
year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mou analysis is provided. Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetlated the seasonal high groundwater is less than 4 feet and a mou analysis is provided.
Standard 4: Water Quality
The Long-Term Pollution Prevention Plan typically includes the following: Good housekeeping practices; Provisions for storing materials and waste products inside or under cover; Vehicle washing controls; Requirements for routine inspections and maintenance of stormwater BMPs; Spill prevention and response plans; Provisions for maintenance of lawns, gardens, and other landscaped areas; Requirements for storage and use of fertilizers, herbicides, and pesticides; Pet waste management provisions; Provisions for operation and management of septic systems; Provisions for solid waste management; Snow disposal and plowing plans relative to Wetland Resource Areas; Winter Road Salt and/or Sand Use and Storage restrictions; Street sweeping schedules; Provisions for prevention of illicit discharges to the stormwater management system; Documentation that Stormwater BMPs are designed to provide for shutdown and containment in event of a spill or discharges to or near critical areas or from LUHPPL; Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan.
 A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent. Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch real calculating the water quality volume are included, and discharge:
is within the Zone II or Interim Wellhead Protection Area
is near or to other critical areas
is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
involves runoff from land uses with higher potential pollutant loads.
 ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits. ☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement an applicable, the 44% TSS removal pretreatment requirement, are provided.



Cł	necklist (continued)
Sta	ndard 4: Water Quality (continued)
	The BMP is sized (and calculations provided) based on:
	☐ The ½" or 1" Water Quality Volume or
	The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
	The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
	A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.
Sta	ndard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)
	The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report. The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted <i>prior</i> to the discharge of stormwater to the post-construction stormwater BMPs.
	The NPDES Multi-Sector General Permit does <i>not</i> cover the land use.
	LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
	All exposure has been eliminated.
	All exposure has not been eliminated and all BMPs selected are on MassDEP LUHPPL list.
	The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.
Sta	ndard 6: Critical Areas
	The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
	Critical areas and BMPs are identified in the Stormwater Report.



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a: ☐ Limited Project Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area. Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff ☐ Bike Path and/or Foot Path Redevelopment Project Redevelopment portion of mix of new and redevelopment. Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report. The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b)

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures:
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan:

improves existing conditions.

- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls:
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

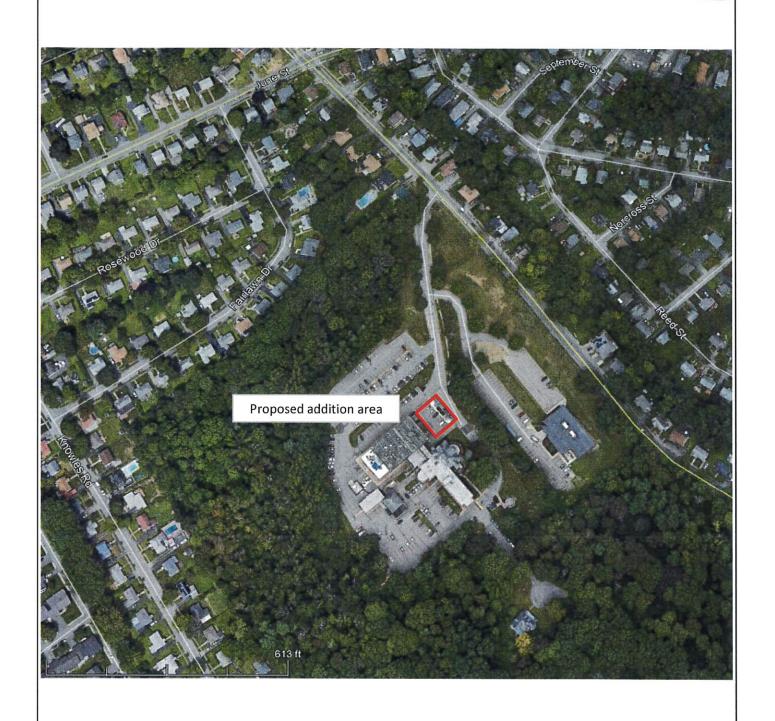
Checklist (continued) Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued) ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has not been included in the Stormwater Report but will be submitted before land disturbance begins. The project is **not** covered by a NPDES Construction General Permit. ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report. ☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins. Standard 9: Operation and Maintenance Plan ☐ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information: Name of the stormwater management system owners; Party responsible for operation and maintenance; Schedule for implementation of routine and non-routine maintenance tasks; Plan showing the location of all stormwater BMPs maintenance access areas; Description and delineation of public safety features; Estimated operation and maintenance budget; and Operation and Maintenance Log Form. ☐ The responsible party is *not* the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions: A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs; A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions. Standard 10: Prohibition of Illicit Discharges The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges; An Illicit Discharge Compliance Statement is attached; NO Illicit Discharge Compliance Statement is attached but will be submitted prior to the discharge of any stormwater to post-construction BMPs.



MAP LEGEND MAP INFORMATION Area of Interest (AOI) The soil surveys that comprise your AOI were mapped at Spoil Area = 1:20,000. Area of Interest (AOI) Stony Spot Soils Warning: Soil Map may not be valid at this scale. 00 Very Stony Spot Soil Map Unit Polygons Enlargement of maps beyond the scale of mapping can cause Ŷ Wet Spot Soil Map Unit Lines misunderstanding of the detail of mapping and accuracy of soil -Other Δ line placement. The maps do not show the small areas of Soil Map Unit Points contrasting soils that could have been shown at a more detailed .. Special Line Features Special Point Features scale. Water Features Blowout (0) Please rely on the bar scale on each map sheet for map Streams and Canals Borrow Pit \boxtimes Transportation 寒 Clay Spot Source of Map: Natural Resources Conservation Service Rails +++ Web Soil Survey URL: Closed Depression 0 Interstate Highways Coordinate System: Web Mercator (EPSG:3857) -Gravel Pit X US Routes Maps from the Web Soil Survey are based on the Web Mercator **Gravelly Spot** projection, which preserves direction and shape but distorts ** Major Roads 50 distance and area. A projection that preserves area, such as the 2 Albers equal-area conic projection, should be used if more Local Roads 557055 accurate calculations of distance or area are required. Lava Flow 1 Background This product is generated from the USDA-NRCS certified data as Marsh or swamp Aerial Photography 44 Sec. of the version date(s) listed below 受 Soil Survey Area: Worcester County, Massachusetts, Miscellaneous Water 0 Northeastern Part Survey Area Data: Version 15, Jun 10, 2020 Perennial Water 0 Soil map units are labeled (as space allows) for map scales Rock Outcrop 1:50,000 or larger. Saline Spot Date(s) aerial images were photographed: Sep 12, 2014—Sep Sandy Spot ... Severely Eroded Spot The orthophoto or other base map on which the soil lines were بيسي compiled and digitized probably differs from the background Sinkhole imagery displayed on these maps. As a result, some minor Slide or Slip shifting of map unit boundaries may be evident. Sodic Spot

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI		
31A	Walpole sandy loam, 0 to 3 percent slopes	4.4	15.1%		
305B	Paxton fine sandy loam, 3 to 8 percent slopes	8.4	28.3%		
305C	Paxton fine sandy loam, 8 to 15 percent slopes	13.8	46.7%		
622C	Paxton-Urban land complex, 8 to 15 percent slopes	1.2	4.2%		
625C	Hinckley-Urban land complex, 0 to 15 percent slopes	1.7	5.7%		
Totals for Area of Interest	-	29.5	100.0%		



Yankee Engineering & Testing, Inc.

10 Mason Street Worcester, MA 10609

Phone: (508) 831-7404 • Fax: (508) 831-7388

Fairlawn Rehabilitation Hospital **Project:**

Location: 189 May Street, Worcester, MA

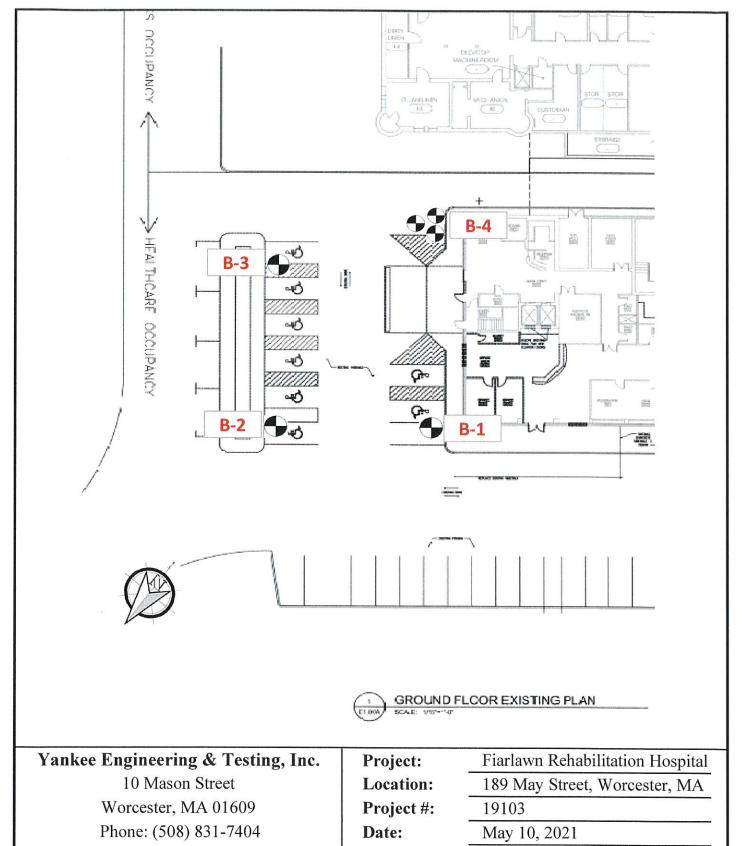
19103 Project #:

May 10, 2021 Date:

Encompass Health Client:

Google Earth SITE LOCUS PLAN FROM:

Approx. Scale Aerial photo FIGURE 1 See Map Scale



Fax: (508) 831-7388

Client:

Encompass Health

FROM: Schematic Site Plan

BORING LOCATION PLAN

FIGURE 2

Approx. Scale:

See map scale

Boring #	B - 1
Sheet #	1 of 1
Location:	Addition west
Elevation:	≈ 597'
Drill Date:	5/10/2021

		_											<u> </u>
Client:		Encompas				_		Туре	SPT	i .	Ground	water Observat	tions
Project:		Fairlawn F	Rehabilitat	ion Hospit	al	_	Drilling	Size	2" I.D.	Depth (ft)	Casing at	Stabilization P	eriod
Project A	ddress:					-	Type	Hammer	140 lbs		1 0.0		
Project N		19103		, , , , , ,		-	',,,,	Fall	30"	No GW	n/a	Upon bori	ng completion
		10100	-					p can	130				
Depth		Bori	ng Sampl	ing Data		Strata		0I- D-			1.01		
(ft)	No.	Depth (ft)	Pen. (in)	Rec. (in)	Blows/6"	Change	1	Sample De	escriptions of	& Geotechnic	cai Observa	itions	Remarks
1	S-1	0-2	24	10	6-2	1	Brown/gra	y, moist, VER	Y LOOSE, silt	SAND little gr	avel/asphalt		4" Asphalt
2	-	Annal & Management and A	Mana NEED STREET STATE OF THE	CHANTE YZBIDEROZOD	2 - 5	William Street Williams	ราการการเหตุสายคมการณ์ (นักปร	William Commercial Commercial Control of Commercial Control of Commercial Control of Commercial Control of Con	zwieniania manya zwienia	THE WHEN PERSON NAMED IN	The second secon	SAME REPORT AND AND DESCRIPTION OF THE PARTY	Fill
3	S-2	2 - 4	24	26	20 - 17	2'	Gray/hroy	vn, damp, den	IMAZ vrlis azı) little gravel	••••		1
A September 1	A STATE OF THE PARTY OF	an although a state of the stat	ACTION AND INCOME.	The substitution of the state o	21 - 25	CONTRACTOR CONTRACTOR	CONTRACTOR OF THE PARTY OF THE	ALEMAN MARKET AND A STREET	THE PARTY OF THE P	A MARKET BLUARE	ECONOMISM AND CONTRACTOR OF THE	and the state of the supplemental control of the state of	A LEAD WAS THE REAL PROPERTY OF THE PROPERTY O
CHARACTER CARREST	anna ann an Aireann an	to of management because	Application of the second state of	NO CONTRACTOR OF THE PERSON OF	ET - 51	CHARLES CONTRACTOR CONTRACTOR	CHARLES STREET,	ELSTEIN VICENTIA MINISTER PARTIEW	and the second second	SALICHE KINGSHIGONIA TRANSCERA	THE PROPERTY OF THE PARTY OF TH	E EN PRINCIPALITA ESTE ENCORAR (IXARE)	Native
		**************************************	ALL THE PROPERTY OF	ALCONOMIC CONTRACTOR IN	TO THE REAL PROPERTY OF THE PARTY OF THE PAR	approximate participation of the property of t	····		omen water comment of the	MA this relative is an additional transmiss	BANKS AND	STATES STOCKED	Comment of the second s
6	S-3	5 - 6'3"	15	9	22 - 25	PRINCES NORMAN MINNES	Gray/brov	vn, damp, ver	y dense, slity	SAND and GRA	VEL	NEW ACKNOWN AND ADMINISTRATION OF THE WORLD AND ADMINISTRATION	
7	COMPANDED TO A	27/12/2020 MINOR SHOW AND STREET SHOW SHOW	Sungarang garagana	STATES OF THE PARTY OF THE PART	50+/3"		1						
8		A MARGINE AND AND A TOUR PERSON	TO THE PARTY OF TH			6'	Augei	r refusal on su	spected boul	der at 6' in nati	ve slity SAND	and GRAVEL	≈ 591 ^¹
9							22011-03-11-03-11-03-11	Harrie A Manual Charles Services	OTTORN STREET, SECTION	A CONTRACTOR OF THE PARTY OF TH	A STATE OF THE PARTY OF THE PAR	CHARLES OF THE PARTY OF THE PARTY OF	A AND AND THE PROPERTY OF THE
10	EXTERIOR N. Sector 1/1/	ACTINISM ASSISTANT MARKET AND	CONTRACTOR ACCORDS	Pitalinamanoon	pactors additionally about the state of the second	No. St. Charles and Mary St. Company	CONTRACTOR SAME AND	Control of the Contro	THE SHARE STREET, ASSESSED AND THE STREET	CANCEL CONTRACTOR CONTRACTOR	Mary Lathard of Billion Nation of Lat.	CANADA TAMBANA MANAMANA MANAMANA MANAMANA MANAMANA MANAMANA	A served the local served in the served of t
11	r kerrustermannenst	OTAL PROSECULAR A REPORT A PLANTAGE SAV	CONTRACTOR DESCRIPTION OF S	PRINCIPLE PROPERTY CONTRACTOR	O CONTROLLE DE LA LACE COMPANSION DE LA CONTROLLE DE LA CALIFICIA DE LA CALIFICA DEL CALIFICA DE LA CALIFICA	auth 2005 ann 4 an Arthur Charles	THE PROPERTY OF THE PERSON	o, Mr. pan, arrestorios Kyronystato, fuestropic	Palantina Articology and and a viscosia	NOTE THE PERSON OF THE PERSON	CONT. COLUMN TO COLUMN TO SERVICE AND SERV	TERMINIST OF STRUCTURE STRUCTURE	A AND AND AND AND AND AND AND AND AND AN
12	ANTATORIK METINATUA	AND THE PROPERTY OF THE PROPERTY OF THE	THE REPORT OF THE PARTY OF THE	Anna and a second	CHARLES WAS STREET, SECTION OF	- PANCIONE CONTRACTOR (N.)	NATION OF CHESTON VINET SWEETS AND	dalerkoussessessessessessessessessesses	STORE LA MANUSCA PARTICIPATOR DE LA MANUSCA	A Commission of the Party of th	ARTICLE VIOLENCE AND SERVICE SERVICES	Rest Management of Party Visited United	CONTRACTOR OF THE PROPERTY OF
13	antinament and		paredemental Control (or tra	THE THE RESIDENCE AND A STREET	den er verifelsteken skiller er senerade operates	CONTRACTOR OF SECURE AND ADDRESS OF SECURE	erted istricum name grop on page	Standarf (2027) All Market March	TO THE PROPERTY OF THE PARTY OF	TO SECURE AND DESCRIPTIONS OF SECURE	NAMES OF THE PROPERTY OF THE PARTY OF THE PA	on many property of the second contract party and	A separate programme and the second section of the second section
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14	h-Wittermanner/eta	NAME OF THE PROPERTY OF THE PR	AND DESCRIPTIONS	CONTRACTOR SECURIOR PRODUCTS	an ideacra de transcente de composition de la composition della co	CHANTE BARRY LVIII, STONOLLESSEN, SPACE	Chipmann and market Seconds	PATAGES CALCULATION AND AND A CONTROL	hadrii Karaburti basa saaray	za nemen deka distrikti kirik kalendari	Billion And Black and American Company	CONTRACTOR OF THE PROPERTY OF	Control (Alle Sandel Control Sander Sand
15 2000-1000-000	SA PELITAKAN WANAN KA	enverseristicis un service de la composition della composition del	ул. Потранения потранения	CONTRACTOR AND	SAN AND SECURITION OF THE SECURITION AND ASSESSMENT		A CONTROL OF BANK AND ROWS	EXCONUESTION TO DESCRIPTION OF THE PARTY OF	Anni vedit S al Fara eroc ariti diren arcabiliren	to the particular to the parti	Contractor Tours (400 on the Miller Main Co	d Adams and a second and a second as a	1
16	Lamente and the		CONTRACTOR CONTRACTOR	L							ALL		A STATE OF THE PARTY OF THE PAR
17			B	1		The state of the s	A STATE OF THE PARTY OF THE PAR		The second section of the second section of the second	Action of Management of the Control	a restrict the second s	PERSONAL PROPERTY AND ADDRESS OF THE PERSON	CONTRACTOR OF STREET, SANS AND STREET, S

Driving Co.:	Soli Ex Corp	<u> </u>	nesive (blows/ft)	
Rig Type:	Mobile B57 Truck	0-2	Very Soft	
Driller:	Mr. Rich Bonetti	2-4	Soft	
Helper:	Mr. Josh Goodale	5-8	Medium Stiff	
Inspector:	Mr. Joel Morin	9 - 15	Stiff	
Client Rep.:	Mr. Joeseph Durkin	16 - 30	Hard	

Cohesionless (blows/ft)		
0 - 3	Very Loose	
4 - 9	Loose	
10 - 29	Medium Dense	
30 - 49	Dense	
50+/ft	Very Dense	

- Refer to geotechnical report dated 5/17/21 for additional information
- Ground elevation based on existing ground surface

Boring #	B - 2
Sheet#	1 of 1
Location:	Addition north
Elevation:	≈ 597'
Drill Date:	5/10/2021

Client:	Encompass Health			Туре	SPT		Ground	water Observations
Project:	Fairlawn Rehabilitation Hospital	Dril	lling	Size	2" I.D.	Depth (ft)	Casing at	Stabilization Period
Project Address:	189 May Street, Worcester, MA	Ту	/pe	Hammer	140 lbs	10'	n/a	Upon boring completion
Project No.:	19103			Fall	30"	10	II/a	Upon boring completion

1	Depth		Bori	ng Sampli	ng Data		Strata	Comple Descriptions & Contachnical Charmetics	T 5 '
S	(ft)	No.	Depth (ft)	Pen. (in)	Rec. (in)	Blows/6"	Change	Sample Descriptions & Geotechnical Observations	Remarks
S - 9 S' Brown/gray, dampt, LOOSE, silty sand some gravel Fill	1	S-1	0 - 2					3" Gray/black, reclaimed gravel/asphalt	4" Asphalt
Same as S-1 but dense	2							8" Brown/gray, damp, LOOSE, silty sand some gravel	Fill
S		S-2	2 - 4	24	20	15 - 21	2'	Same as S-1 but dense	Native
Same as S-1 but very dense Nativery	4	ANTIDE PARTICIONAL	W K ST Strike W. a.		The state of the s	20 - 22			Control of the second s
The image of the	5		COMPANY DESIGNATION OF THE PARTY OF THE PART	The second second second	D.V.S.J. SOCIAL VALUE OF STREET	n 2000 or a 2000 or a 1000 or a			Section 1925 Ville 1988 Aldres Insert Co.
Same as S-1 but very dense	6	S-3	5 - 7	24	16	18 - 36	EELE CORT. I DANNING HAARING HAA	Same as S-1 but very dense	Native
10	7	OPARINGE INCOME.	STATE OF THE STATE	ORCHERORIC SEA DAIME	Magazi - 200 - 200 (200 - 244 (200 - 200)	SOCIONAL VIEW SECTION AND THE PROPERTY SECTION			CONTRACTOR AND A PROPERTY.
10	ACMAN ASSESSMENT OF STREET	S-4	7 - 7'3"	3	3	50+/3"	THE STREET OF THE STREET, NAMED OF THE STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET,	Same as S-1 but very dense	Native
11 S-5 10 - 12 24 14 15 - 17 10 Same as S-1 but very dense and moist Native State of the St	A CANADA TO SAIL TO SA	government personnen eur		**************************************	CONTRACTOR STORY AND A	Nami Porthermonal Britanian Landon	indicated Tay b andson		
12	PRINTER PROPERTY AND ADDRESS OF THE PARTY AND	THAT BANKER OF	entiti kuurun kankaasiintaa paramaana	omanin'i andronana avena	AND SECTION AND ASSESSED.		<u> </u>		
13	THE WAR STORY OF THE PARTY OF THE	S-5	10 - 12	24 ************************************	14	THE PARTY OF THE P	10'	Same as S-1 but very dense and moist	Native
14	SENIOR MESS EARLING	forsammasm.	hadim Minadi Mhamillian dananda sa mamalan	Manufak (mantik filata) men	an and action of the section of	43 - 20	SERVINANTICEN PROFESSION CONTESTION CONTESTION		THE RESERVE AND A SHARE WAS A
15 16 S-6 15-17 24 18 10-19 Brown/gray, moist, dense, SILT and SAND trace gravel Nativ 17 18 19 20 21 S-7 20-22 24 12 14-32 Gray, moist, very dense, silty SAND trace gravel Nativ 22 32-38 23 21 Boring terminated at 22' in native silty SAND trace gravel ≈ 575 24 25 Drilling Co.: Soll Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) • Refer to geotechnical report dated 5, for additional information Driller: Mr. Rich Bonetti 2-4 Soft 4-9 Loose Helper: Mr. Josh Goodale 5-8 Medium Stiff 10-29 Medium Dense surface	**************************************	PERMITTAL STREET	a testitutus manay tengganana	eller ar mendenskelense velk	en Chieronicus oscinos	e Pelatina a analogo antigra de Persona de la	ACTION AND ACTION ASSESSMENT OF A PARTY.		STATEMENT FOR HIS WATER TO THE SELECTION OF
16	:missiotenenumentees	genzearen en estatuar en	TO THE PARTY OF TH	agreneraevaevaeva.	THE RESERVANCE OF THE PERSONS	reconstruction and services and control	A MANAGE AND AND AND A SECURITY OF THE PARTY		THE SAME OF SA
17	ET-SPENEDAL/ARTHURACION NO	Le response de la constante de	Deliver Miller Mark Miller Mark Mark Mark Mark Mark Mark Mark Mar	CONTRACTOR STREET	-rostristoren madelitistore	CONTROL SALVANTANIA (SALVANTANIA (SALVANTANIA (SALVANTANIA (SALVANTANIA (SALVANTANIA (SALVANTANIA (SALVANTANIA	Commencial and the Commence of		
18 19 20 21 S-7 20 - 22 24 12 14 - 32 Gray, molst, very dense, slity SAND trace gravel Native 22 23 23 24 25 Boring terminated at 22' in native slity SAND trace gravel \$\infty\$ \$\infty\$ SITY SAND trace gravel \$\infty\$ \$\infty\$ SITY SAND trace gravel \$\infty\$ \$\infty\$ SITY SAND trace gravel \$\infty\$ \$\infty\$ SITY SAND trace gravel \$\infty\$ \$\infty\$ \$\in	The second second second second	S-6	15 - 17	24	18	CHARLES AND THE CONTRACTOR OF	Salan i Askaran Maria Anton in ana banan	Brown/gray, moist, dense, SILT and SAND trace gravel	Native
19 20 21 S-7 20 - 22 24 12 14 32 Gray, molst, very dense, silty SAND trace gravel Nativ 22 32 32 38 22' Boring terminated at 22' in native silty SAND trace gravel \$\infty\$ 575 24 25 25 Drilling Co.: Soil Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) Rig Type: Mobile B57 Truck 0 - 2 Very Soft 0 - 3 Very Loose For additional information Driller: Mr. Rich Bonetti 2 - 4 Soft 4 - 9 Loose • Ground elevation based on existing entrance gravel \$\infty\$ 8 Refer to geotechnical report dated 5 for additional information • Ground elevation based on existing entrance gravel \$\infty\$ 8 Refer to geotechnical report dated 5 for additional information • Ground elevation based on existing entrance gravel \$\infty\$ 8 Refer to geotechnical report dated 5 for additional information • Ground elevation based on existing entrance gravel \$\infty\$ 8 Refer to geotechnical report dated 5 for additional information • Ground elevation based on existing entrance gravel \$\infty\$ 10 - 29 Medium Dense	STATE VALUE TO A STATE OF THE S	and the second second second second	COSC PROMOTE PARTY VARIABLE AT A PARTY COME.	ANTERNANCES FRANCISCO	TANK COMMINGS COMMINGS CO.	27 - 33	Apprecia recognización de proprio de securios de securios de securios de securios de securios de securios de s		THE BESTERN SECRETARY SEPTEMBER OF THE SECRETARY SERVICE STATES OF THE SECRETARY SECRETARY SERVICES.
21 S-7 20-22 24 12 14-32 Gray, moist, very dense, silty SAND trace gravel Nativ 22 32 8 22 Boring terminated at 22' in native silty SAND trace gravel \$\approx 575\$ 24 25 Drilling Co.: Soil Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) • Refer to geotechnical report dated 5, Rig Type: Mobile B57 Truck 0-2 Very Soft 0-3 Very Loose For additional information Driller: Mr. Rich Bonetti 2-4 Soft 4-9 Loose • Ground elevation based on existing graphs. For additional single surface surface	Children Lancon Commencer (1986)		ала албетичний стинатик связия	CEINTELEATIVE NO.	THE PERSON NAMED IN	AND THE PROPERTY OF THE PROPER			la kanada sekasika kemekeranjan masak, melangan mes
21 S-7 20-22 24 12 14-32 Gray, moist, very dense, silty SAND trace gravel Nativ 22 Boring terminated at 22' in native silty SAND trace gravel \$\approx 575\$ 24 25 Drilling Co.: Soil Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) • Refer to geotechnical report dated 5, Rig Type: Mobile B57 Truck 0-2 Very Soft 0-3 Very Loose for additional information Driller: Mr. Rich Bonetti 2-4 Soft 4-9 Loose • Ground elevation based on existing generating the surface of the sur	AND RECOMPROPERTY OF MARKETONIAN	en in de la company de la comp	MANAGE AUTOLOG (1900) (1900) (1900) (1900)	PERSONAL PROPERTY NAMED IN		CONTRACTOR OF THE PROPERTY OF	and the second s		NO COLUMN TO SERVE A MARTIN DESCRIPTION OF THE PROPERTY OF THE
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22 Boring terminated at 22' in native sity SAND trace gravel \$575 24 25 Drilling Co.: Soil Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) • Refer to geotechnical report dated 5, Rig Type: Mobile B57 Truck 0 - 2 Very Soft 0 - 3 Very Loose for additional information Driller: Mr. Rich Bonetti 2 - 4 Soft 4 - 9 Loose • Ground elevation based on existing generating the surface of the surfac	"Exercise Medical Colors (Supplemental)	2-/-	ZU - ZZ	Z4	AND CANDON MANAGEMENT TO SEE	PROPERTY OF THE PROPERTY OF TH	STUTEN SEAR SHEELSCASSESSON OFFICERS	Gray, moist, very dense, stity sand trace gravet	Native
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Drilling Co.: Soil Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) • Refer to geotechnical report dated 5, Rig Type: Mobile B57 Truck 0 - 2 Very Soft 0 - 3 Very Loose For additional information	(ARTHUR TORON)	THE STREET STREET, STR	SELECTRONICATIONS CONTRACTOR OF THE PROPERTY O	Novament of the second states	A CORTINUE A PERSONAL PROPERTY AND ADDRESS OF	Committed 大きされることがあることがあることできません。	paranto es anomatoros paras anacesas anace	BOHIII CEITIIII ACC SILV SAIVU Trace gravei	≈ 2./2,
Drilling Co.: Soll Ex Corp Cohesive (blows/ft) Cohesionless (blows/ft) • Refer to geotechnical report dated 5, for additional information Rig Type: Mobile B57 Truck 0 - 2 Very Soft 0 - 3 Very Loose for additional information Driller: Mr. Rich Bonetti 2 - 4 Soft 4 - 9 Loose • Ground elevation based on existing ground elevation ground elevation based on existing ground elevation based on existing ground elevation based on existing ground elevation el	ACT DOOR PROPERTY AND A STATE OF THE STATE O	SALES AND SALES	alithi adimikina amana energa	MICH SALECTES STEMPORARIAN CONT	лиштиморию достина <u>.</u>	NAME AND ADDRESS OF THE PARTY OF THE PARTY.	PRINCE WANTED TO A LOCATION OF THE PRINCE WAS A SHORT OF THE WAS A SHORT		ana niika ee esimmaana aana aa ee aa kiista
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Driller: Mr. Rich Bonetti 2 - 4 Soft 4 - 9 Loose • Ground elevation based on existing government. Helper: Mr. Josh Goodale 5 - 8 Medium Stiff 10 - 29 Medium Dense surface	_								
Helper: Mr. Josh Goodale 5 - 8 Medium Stiff 10 - 29 Medium Dense surface								Tot additional interpretation	
Sunge								diddid cicvation bases	i on existing ground
mayorar miroderment V IV Own IV-TV DUING					/			Sange	
Client Rep.: Mr. Joeseph Durkin 16 - 30 Hard 50+/ft Very Dense						- , -			

Туре

SPT

30 - 49 Dense 50+/ft Very Dense

Client:

Inspector: Client Rep.: Encompass Health

Mr. Joel Morin Mr. Joeseph Durkin

Boring #	B - 3
Sheet#	1 of 1
Location:	Addition east
Elevation:	≈ 598'
Drill Date:	5/10/2021

Groundwater Observations

Project:		Fairlawn F					Drilling	Size	2" l.D.	Depth (ft)	Casing at	Stabilization Po	eriod
Project A		189 May S	treet, Wo	rcester, M	IA		Туре	Hammer	140 lbs	10'	n/a	l Inon bori	ng completion
Project N	0.:	19103	-					Fall	30"	,,	11100	Орон вон	ng completion
Depth			ng Sampl			Strata		Sampla Da	corintiana l	& Geotechnic	ad Obaanua	tions	Downsels
(ft)	No.	Depth (ft)			Blows/6"	Change					Jai Ouseiva	lions	Remarks
1	S-1	0-2	24	12	5 - 14	Silver and the state of the sta	THE TAX OF THE PARTY OF THE PAR	amp, sand and	ATTACAMENTAL STREET, VICTORIAN PROVIDE	A Safe Artificia (National Artificia) and Artificia (National Artificia) and Artificia (National Artificia) and Artificia (National Artificia) and Artificia (National		CONTRACTOR SANCTON	4" Asphalt
2	ar water designation of the	allow positions brooking accommodation and	ne more makada art erdene kita	тинстикачанала	17 - 15		<u> </u>	moist, dense,					Fill
3	S-2	2 - 4	24	14	18 - 22	2'	Brown, da	mp, very dens	e, silty SAND	and grave	gamman der ban apangan grapa.	TO A CONTROL NAME OF THE PARTY	Native
4	CONSTRUCTION AND A SECOND	ARTONOGRAPHIS IN ANTONOGRAPHIS PARTIES	Ondoor programmer sought	and August States and a second	28 - 21	TO THE PERSON WAS AND A PROPERTY OF THE PERSON NAMED IN COLUMN TWO PERSONS ASSESSMENT OF THE PERSON NAMED IN COLUMN TWO PERSONS ASSESSMENT OF THE PERSON NAMED IN COLUMN TWO PERSONS ASSESSMENT OF THE PERSON NAMED IN COLUMN TWO PERSONS ASSESSMENT OF THE PERSON NAMED IN COLUMN TWO PERSONS ASSESSMENT OF THE PERSON NAMED IN COLUMN TWO PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO PERSON NAMED I	PARTICULAR MOTAL MARCINA PARTIC	Name of the State	errenningspromerative property and	EN HERST ROBERTH BY ME ACTIONS	CANANA MARINERA DE CANTO CANTO CANTO		enis in terminary research company of the state of the
5	en en calibratan en casa de	ENCLYSIANICANINE PROFESSION VINNING	anculars y x lakes a	STATE OF THE PROPERTY OF THE P	AND SOMEON MANAGEMENT OF STREET	r standard v and manufactures.	an and an extensive section of the first	KATTAKATTI MENGANIN MENGANIN SASA	OK Section College College And College College	and emphasis the constraint and accompany of	intere-constitutivation (N. Am	MC 2411 or Other and Affician construction of paper managers (specific	Miles to VI select a constant and describe the constant of the
	S-3	5 - 7	24	16	44 - 40	non-reconstruction management	Same as S-	·2	and the second section of the second	owners in the fallow of the control	inin 1904 i Brain Beannaigh an Coloniaeach	西亚州北部 西亚中华亚州市福州市(李年中2008年	Native
7 summerika prosentario		THE CHARLES OF THE CHARLES OF THE CHARLES	Pent iteritre maniciona	CISSUMERNA PROGRAMMA	40 - 32	CONTRACTOR OF THE STATE OF	anamananan meneral menarah men	THE THE PROPERTY OF THE PROPER	NAME OF SECURITY SECU	NACOSTA EL PRODEZ PROCESANDA EL PROCESANDA E	ETTERS CONTROL DE ETTERS ANGENOMS ANGE	CONTRACTOR SCIENCE A SCIENT FOR STRANGE US	l du - mandieu portó antendésisté falorem extendeso / an.
20000000000000000000000000000000000000	5-4	7 - 8	12	12	43 - 50+/6"	Collections in the control of the co	Brown, da	mp, very dens	e, silty SAND	some gravel	orani wala wa yakazio wakazio wakazio wakazio wakazio wa kata wakazio wakazio wakazio wakazio wakazio wakazio		Native
9	TOTAL STREET,	TO COMPANY THE SECOND HOLDING WITH	ruht kölentila rünktatsatta.	CARACTERISTICS OF THE SPECIAL PRINT	an a	armana 🗡 esteracion	NAMES OF STREET STREET,	PARTIE AND VARIABLE AND STATE			Land Control of the C	Professional administration and a control of the co	Auffrice Africa Antificial Company
10	SAL-PORTURE SERVICES	gen ett hat beskikklik in wastenderstikk in	o-e-athatamagao-am-anaga	en eriticaturus uttennal									
11	S-5	10 - 12	24	14	13 - 14	10'	Same as S-	2 but mediun	n dense and n	noist	METERS OF THE CONTROL	COMMON MARKETTA DE PROPERTO DE LA COMPANSIONA DEL COMPANSIONA DE LA COMPANSIONA DE LA COMPANSIONA DE LA COMPANSIONA DE LA COMPANSIONA DEL COMPANSIONA DE LA	Native
12	SECTION AND SECURITY.	enticus (militari (militari militari militari militari militari militari militari militari militari militari m	Description of a section of the contract of th	and the trade about the second transfer to the second transfer transfer to the second transfer transf	11 - 15	ALE CATEGORIA CONTRACTOR AND	NAME AND PROPERTY AND ADDRESS OF THE	and the state of t	LODELY NEO KITHINA PORTEDONINI PA	CN - AND IN - COMMISSION OF CASE OF COMMISSION OF COMMISSI	SERVICE AND ADDRESS OF THE PROPERTY OF THE PRO	BACTERITATION NAMED AND ADDRESS OF THE PARTY A	
13	-	NACE CONTRACTOR STATE OF THE PROPERTY OF THE P	Output market event and the	an mening terresing			CONTRACTOR OF THE STATE OF THE	SECTION AND SECTION AND SECTION ASSESSMENT OF THE PROPERTY OF	herve military management annual services and	THE PERSON NAMED IN THE PE	o TORNE HOW JAB WENNEY TOWN		
14	or seemen manner	North William Malbury Maryan Products	Secretarion revenues	Grafian de la companya de la company		-	TOTAL CONTRACTOR OF THE PARTY O	where a commence	ETERGETINI SPERVIK AMBROLO	CALINATA VICENCY & VICENCY American			
15	an essential and a second	CONTRACTOR CONTRACTOR SOME A PAGE OF STATE	CONTRACTOR OF SPRINGS	an and a second	schine berotek schmingerennen versch	A SOUR CHARLES WAS ASSOCIATED AS	COMMENT AND DESCRIPTION OF THE PARTY.						
16	S-6	15 - 17	24	18	15 - 22	ALTEROPORATE PARTITION AND AND AND AND AND AND AND AND AND AN	Same as S-	2 but dense					Native
17	CANADA MANADA				27 - 24				The state of the s	William Company		A CONTRACTOR OF STREET A DESIGNATION OF STREET	CE and AL STONE SHOP NAME AND ADDRESS OF THE PARTY.
18	NATIONAL PROPERTY.	ELITATI MINE MATERIAL INCOME	DESCRIPTION OF THE PROPERTY OF	THE PARTY OF THE P									TOWN OF THE PARTY
19	and the state of t		AND AND THE ADMINISTRATION OF THE PARTY OF T	ANTENNA ANTONO NA ARRIVA								AND COMPANY THE PARTY OF THE PA	A THE PARTY OF THE
20	AFN: SECRETARISE SAN	ACTIVITY OF THE PROPERTY OF TH	A THE STANDARD STANDARD WAS A	N. C.							A SUR CHESK PRINTERS AND SOCIETY	ACCOUNTS OF THE PROPERTY AND ACCOUNTS ASSUME	ATTRACTOR VINES TO SEE SON AND SEE SEE SEE SEE SEE
21			National and Assessment	Contractor and the contractor	A DESCRIPTION OF THE PROPERTY		ACCOUNT OF THE PARTY OF THE PAR					A CONTRACT STREET, STR	A PARTY OF THE PARTY OF TAXABLE PARTY.
22	S-7	20 - 22	13	16	23 - 38		Brown, da	mp, very dens	se, silty SAND	little gravel		AND A STATE OF THE PROPERTY OF	Native
23	The state of the s				50+/1"	COMPANIE MANAGEMENT	and the second s	A THE REAL PROPERTY CONTRACTOR OF THE PARTY	The state of the s	AND DESCRIPTION OF THE PROPERTY OF THE PROPERT	ORNOLOGICS AND DESCRIPTION OF	THE RESERVE THE PROPERTY OF THE PARTY OF THE	A TOTAL STREET, A TOTAL STREET, AND STREET
24						22'	440 m. 1944 440 440 440 440 440 440 440 440 440	Boring terr	minated at 22	in native silty	SAND little gra	ivel	≈ 576 '
25						110000000000000000000000000000000000000	CHECKE PRODUCE CO.			CM-071/06/00-CH (CC-07/CA-06/CM	THE STREET STREET	SCHOOL STATE OF STATE	Constitution of the Consti
Drilling	Co.:	Soil Ex Co			<u>Coh</u>	esive (blows/	ft)	<u>Cahe</u>	sionless (b	lows/ft)	• Refer to	geotechnical re	port dated 5/17/21
Rig Typ	e:	Mobile B5	7 Truck		0 - 2	Very Soft		0 - 3	Very Loos	se		onal information	
Driller:		Mr. Rich B	onetti		2 - 4	Soft		4 - 9	Loose				on existing ground
Helper:		Mr. Josh C	Goodale		5-8	Medium Stiff		10 - 29	Medium E	Dense	surface		
Inchest	ar:	Mr. Jool M	larin		0.46	CHIEF		20 40			1		

Stiff Hard

9 - 15 16 - 30

Boring #	B - 4
Sheet#	1 of 1
Location:	Addition south
Elevation:	≈ 597'
Drill Date:	5/10/2021

Client: Project: Project A Project N		Encompas Fairlawn R 189 May S 19103	lehabilitat				Drilling Size 2" I.D. Type SPT Groundwater Observation Depth (ft) Casing at Stabilization Peters No GW n/a Upon boring	
Depth (ft)	No.	Borii Depth (ft)	ng Sampli Pen. (in)		Blows/6"	Strata Change	Sample Descriptions & Geotechnical Observations	Remarks
1	S-1	0 - 2	24	6	4 - 3	NAMES OF THE OWNER, WHICH THE OWNER, WHICH THE	2" Gray, damp, sand and gravel	4" Asphalt
2	THE STREET		THE ROTTE CONTRACTOR		5 - 8		4" Brown, damp, LOOSE, silty sand and gravel	Fill
3	S-2	2 - 4	24	10	5 - 10	2'	Brown/gray, damp, medium dense, silty SAND little gravel	Native
4			CONTRACTOR OF STREET	ALIANE TO THE TANK	17 - 12	THE SAME STATE OF THE SAME OF THE SAME STATE OF	AND	A APPLICATION OF THE PARTY OF T
5	AND ADDRESS OF THE PARTY OF THE	CHARLES AND	NAME OF THE PARTY	Park Verkinin kerancarkan kerin	Monther no Sensitiva Marian Harita.	400 PMCGCCCACAGGGG, CCCCGGGGG	Refusal x 2; move 3' away from existing building	Native
6	S-3	5 - 6'3"	15	8	19 - 30		Same as S-2 but very dense	
7	SAN	CERCOCO-100-F-2-2007001200-1201-1201-1201-1201-1	or the contract of the contrac	Strike Angelong Angelong Alberta	50 +/3"		The state of the s	A STATE OF THE PROPERTY OF THE PARTY OF THE
8 emilionistationalistation	CONTRACTOR OF STREET, ST.	CONTRACTOR STREET, CARROLL STREET, CO.	SHOWN AS THE SECOND A TRANSPORT AND A	NEW TENEW ACTORNOLOGY	AND DESCRIPTION AND DESCRIPTION OF THE PERSON OF THE PERSO	6'3"	Boring terminated with auger refusal on suspected boulder	≈ 591 [']
9	PERMITTAL PROPERTY.	TOTAL STATE OF THE	STEREOUM FRANCISCO CONTRACTOR	Par Narahiya Narahiya Marena	W CHRONOLING COLOR CO	CTEN CLERGE LECTURE ET CERTAINE	at 6'3" after attempting 3 holes in native silty sand and grave	
10	TOTAL TARREST AND ADDRESS AND	CHARGE AND A CONTRACTOR BOOK IN	TISANNA NON TORRESON	COLON DE LA COMPANSA	ALESTER REGER EN PERSONNELLA REGERE	ATTENDA OF THE SHAPE WHEN THE STATE OF THE S	W. SOWARY DESCRIPTION TO THE WAY AND ADDRESS OF THE WAY AND ADDRESS	A CONTRACTOR OF THE CONTRACTOR
11	ENT HEREESTAND PRESENCE	entre constitutiva por constitutiva de la cons	COMPONENCE NO PROPERTO	E-MAINERSCENERAL MARKATON DAVIDES	o factor de la constitució de	da. namen julitir e kinemannan ili ancesa		The state of the s
12		and the stranger of the strang	and the state of t	CONTRACT CONTRACT OF THE	VIDANICA MILITARIO DE PERONA PERO			
13	COMMUNICATIVE STREET, ALL	WATER STREET THE STREET THE STREET	AND THE PROPERTY OF THE PROPER	OTHER DESCRIPTION AND ADDRESS OF THE PERSON NAMED IN	A Thirthead and a State of the Control of the Contr	ACTION OF THE OWNER, WHEN THE PARTY THROUGH	TEXES 1.71 NOTE: 1.12 Control of the	
14		pleteleral aculturalerae aname		AN ARGUM EL PORTONIONES	AND REAL PROPERTY OF THE PROPE	ATTERNET A CONTROL OF STREET STREET STREET		The second secon
15	CONCORDANCE OF THE		contest to a transmission of correct	NAT CANDESTONIAN MOONE	o no dise surre i respector i richiano	AND		The state of the s
16	TO COLUMN TO THE PARTY OF THE P	THE CONTRACT OF STREET	AND ROLLING TO STATE OF THE PARTY OF THE PAR	THE COUNTY AND COME TO SEE	CONTRACTOR OF THE	ACCORDING THE PROPERTY AND THE PARTY AND THE		Manage Programme Control of the Cont
17		TO THE REAL PROPERTY AND THE PARTY OF THE PA	and the same services	AND A CONTRACTOR OF THE PARTY.				A THE PARTY OF THE
18	ALVERT BEAUTY	THE STATE OF THE S	WATER CONTROL TO THE CONTROL OF	THE PERSON NAMED IN THE PE	Market	AND		A CONTRACTOR OF THE PROPERTY O
19			The state of the s	200200000000000000000000000000000000000	NAMES OF THE PARTY	The state a second way of the second		Committee of the second
20		AND THE PERSON AND TH						COLUMN TO THE COLUMN THE PROPERTY OF THE PROPE
21	- AUTHORN STREET	CHARLEST STREET, STREE	COLUMN THE STREET	CATAMORPH NAVIOUS NAVIONAL	AND PERSONAL PROPERTY.	MC CHANCING THE COLUMN		NO STREET, STR
22		Carry Alexander or Market American	V0-10-10-10-10-10-10-10-10-10-10-10-10-10					ALL REPORTS CONTINUES OF THE PROPERTY OF THE P
23							THE RESERVE OF THE PROPERTY OF	A MENTAL CONTRACTOR OF THE PROPERTY AND ADMINISTRATION OF THE PROPERTY OF THE
24			A THE PARTY OF THE	Control			· ************************************	Marin William angles (A village) A village die sont for

Rig Type:
Driller:
Helper:
Inspector:
Client Rep.:

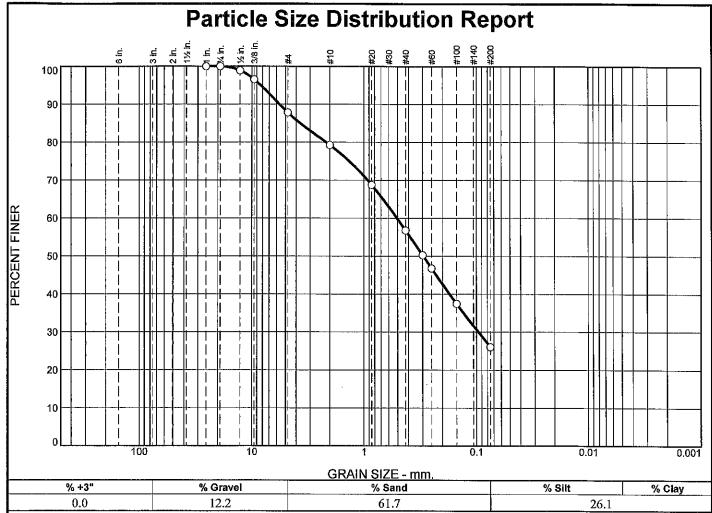
Soil Ex Co		
Mobile B5	7 Truck	
Mr. Rich B	onetti	
Mr. Josh G	Goodale	
Mr. Joel M		
Mr. Joese	oh Durkin	

<u>Cc</u>	hesive (blows/
- 2	Very Soft
-4	Soft

2 - 4	Soft
5 - 8	Medium Stiff
9 - 15	Stiff
16 - 30	Hard

Cohesionless (blows/ft) Very Loose 4 - 9 Loose

- Medium Dense 30 - 49 Dense Very Dense 50+/ft
- Refer to geotechnical report dated 5/17/21 for additional information
- Ground elevation based on existing ground surface



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	100.0		
1/2"	98.9		
3/8"	96.5		
#4	87.8		
#10	79.3		
#20	68.8		
#40	56.8		
#50	50,3		
#60	46,8		
#100	37.5		
#200	26.1		
* /	·~ ·· · · · · · · · · · · · · · · · · ·		

	Material Descriptic me silt little gravel	<u>on</u>
PL= NP	Atterberg Limits LL= NV	PI= NP
D ₈₅ = 3.6700 D ₃₀ = 0.0959 C _u =	Coefficients D60= 0.5060 D15= C _C =	D ₅₀ = 0.2957 D ₁₀ =
USCS= SM	<u>Classification</u> AASHT	O= A-2-4(0)
	Remarks ed by Joel Morin 5/10, report for additional is	

Sample No.: \$2 Location: B1 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 2'-4'

YANKEE ENGINEERING & TESTING, INC.

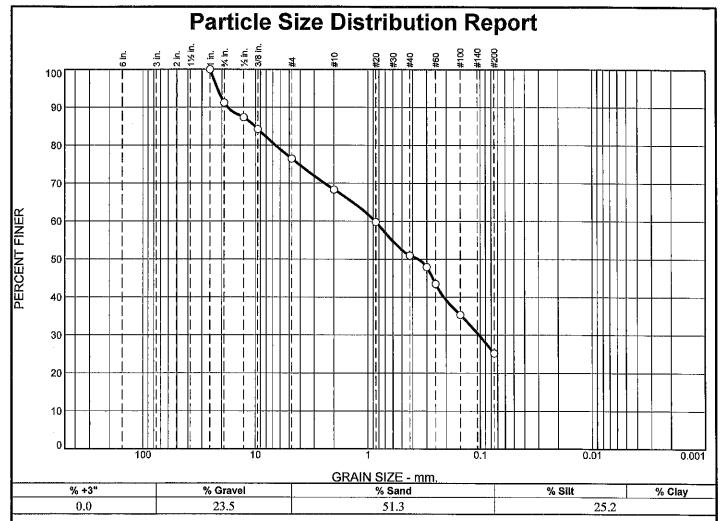
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK Checked By: SMM



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	91.2		
1/2"	87.4		
3/8"	84.2	İ	
#4	76.5		
#10	68.3		
#20	59.8		
#40	51,0		
#50	47.9		
#60	43.5		
#100	35.4		
#200	25.2		•
			ı
	,		

	/laterial Descript D some silt some gr	
PL= NP	Atterberg Limit	<u>s</u> PI= NP
D ₈₅ = 10.1300 D ₃₀ = 0.1024 C _u =	Coefficients D60= 0.8626 D15= Cc=	D ₅₀ = 0.3561 D ₁₀ =
USCS= SM	Classification AASH	TO= A-2-4(0)
"	Remarks d by Joel Morin 5/1 eport for additional	

Sample No.: S3 Location: B2 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 **Elev./Depth:** 5'-7'

YANKEE ENGINEERING & TESTING, INC.

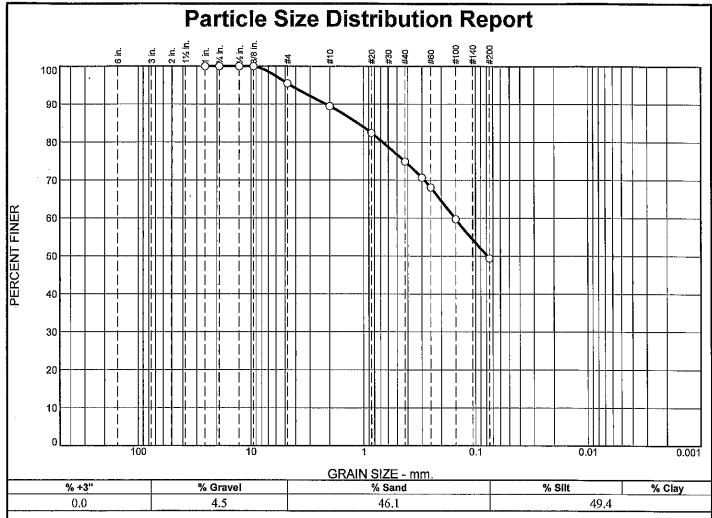
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK Checked By: SMM



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	95,5		
#10	89.5		
#20	82.4		
#40	74.9		
#50	70.7		
#60	68.1		
#100	59.7		
#200	49.4		
* (:6:		

	<u> Material Descriptio</u>	<u>on</u>
Brown/gray SILT	and SAND trace grave	vel
DI = ND	Atterberg Limits	
PL= NP	LL- NV	PI= NP
D 11051	Coefficients	D 0.000
D ₈₅ = 1.1254	D ₆₀ = 0.1527	D ₅₀ = 0.0782 D ₁₀ =
D ₃₀ = C _u =	Cc⊒	-10
	Classification	
USCS= SM	AASHT	O= A-4(0)
	Remarks	
	ed by Joel Morin 5/10	
See geotechnical	report for additional i	nformation

Sample No.: S6

Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 15'-17'

Location: B2

Client: Encompass Health

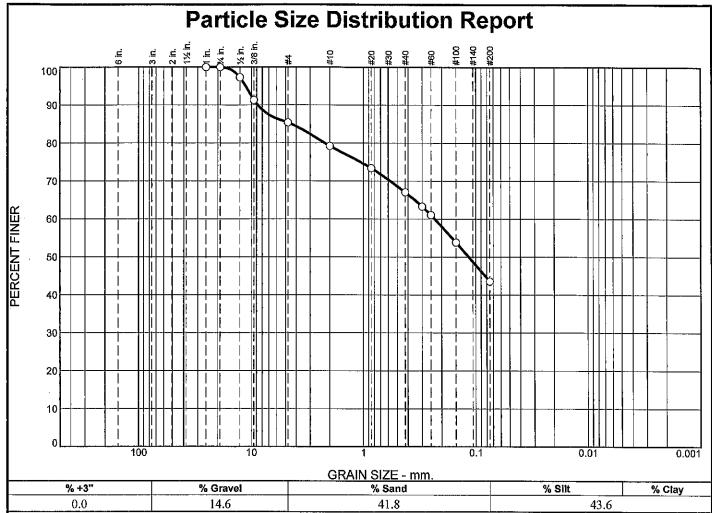
Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

YANKEE ENGINEERING & TESTING, INC.

Tested By: AK Checked By: SMM



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	FINER PERCENT (
1"	100.0		
3/4"	100.0		
1/2"	97.3		
3/8"	91.3		
#4	85.4		
#10	79.2		
#20	73.4		
#40	67.0		
#50	63.3		
#60	61.0	İ	
#100	53.8		
#200	43.6		
		ļ	

41.0	43.0	
	Material Description and SILT little grave	
PL= NP	Atterberg Limits	PI= NP
D ₈₅ = 4.4144 D ₃₀ = C _u =	Coefficients D60= 0.2313 D15= C _C =	D ₅₀ = 0.1156 D ₁₀ =
USCS= SM	Classification AASH1	ΓO= A-4(0)
	Remarks d by Joel Morin 5/10 report for additional i	

Sample No.: S7 Location: B3 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 **Elev./Depth:** 20'-22'

YANKEE ENGINEERING

& TESTING, INC.

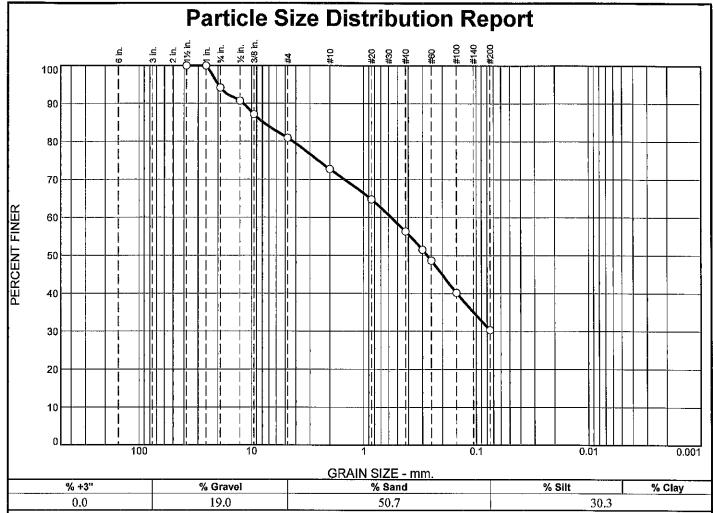
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK Checked By: SMM



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT (X=	
1-1/2"	100.0		
1"	100.0		
3/4"	94.2		
1/2"	90.7		
3/8"	87.2		
#4	81.0		
#10	72.7		
#20	64.7		
#40	56.3		
#50	51.5		
#60	48.6		
#100	40.2		
#200	30.3		

	Material Description me silt little gravel	<u>on</u>
PL= NP	Atterberg Limits	: PI= NP
D ₈₅ = 7.8419 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.5667 D ₁₅ = C _c =	D ₅₀ = 0.2721 D ₁₀ =
USCS= SM	Classification AASHT	O= A-2-4(0)
	Remarks ed by Joel Morin 5/10, report for additional i	

Sample No.: S2 Location: B4 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 2'-4'

YANKEE ENGINEERING & TESTING, INC.

Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK

Checked By: SMM

CONSTRUCTION PERIOD (SHORT TERM) STORMWATER OPERATION & MAINTENANCE PROGRAM September 14, 2021

Fairlawn Rehabilitation Hospital Addition and Renovations 189 May Street Worcester, Massachusetts

Currently Owned by: New England Rehabilitation Hospital of Central Massachusetts, Inc.

During construction, the contractor is responsible for the following inspection and maintenance. Inspections and resulting maintenance tasks shall be recorded in an <u>Inspection Log</u> that is kept on site and available for inspection by municipal officials.

Contact Ir	Contact Information:					
Name: Address: Contact: Phone:	To be determined					

- 1. Sediment control barriers shall be inspected on a weekly basis. The inspector shall inspect for barriers overturned, barriers which have lost contact with the ground allowing runoff to pass underneath them and biodegradation of straw wattles.
- 2. If collected silt against the sediment control barriers has reached to half the height of the silt fence then it shall be removed. If a sediment control barrier must be replaced, the inspector shall inform the City, contractor, and owner immediately to have this replacement made as soon as possible.
- 3. The site entrance mat shall be inspected on a weekly basis and refreshed as necessary.
- 4. The drainage inlets and outlets shall be inspected on a weekly basis and immediately after storm events of $\frac{1}{2}$ inch or more to confirm that they are functioning properly. If any defects are observed or if the inspector shall inform the Engineer, contractor, and owner immediately.
- 5. The proposed lawn and landscape areas created will be inspected for the presence of rills or other areas of erosion. If areas to be vegetated become bare through either erosion or the failure of vegetation to take, the inspector shall inform the contractor and owner and additional hydroseeding or planting shall be performed, as necessary, to achieve full stabilization through vegetation.
- 6. If fertilizer is used it must be low in phosphorus and utilize slow-release phosphorus.
- 7. Pet wastes, food waste, and construction debris must be collected and disposed of, not allowed to biodegrade or enter stormwater runoff.

POST CONSTRUCTION (LONG TERM) STORMWATER OPERATION & MAINTENANCE PROGRAM September 14, 2021

Fairlawn Rehabilitation Hospital 189 May Street Worcester, Massachusetts

Post-Construction Owner and Applicant

Owner Information:				
Name: Address: Contact: Phone:	Fairlawn Hospital 189 May Street, Worcester, MA Josiah Moyer, Facilities Director 508-791-6351			

Upon completion of the project, the yard and landscaping will continue to be maintained by the future lot owner. Once the construction site has been fully stabilized, the owner should establish a schedule and keep a log of inspection and maintenance activities for the measures described below:

Landscape Maintenance:

Vegetated areas in the landscape will reduce erosion, encourage infiltration of rainwater, and keep stormwater clean. It is important to maintain the vegetated areas of the site.

- 1. Proper mowing is one of the most important ways to maintain a healthy lawn. Mow only when the grass is dry to get a clean cut and minimize the spread of disease. Mow grass to a height of
- 3". Mow frequently, cutting no more than 1/3 of the height of the grass at a time. Sharpen your mower blades after every 10 hours of mowing.
- 2. Grass clippings contain high amounts of nitrogen, a key ingredient in fertilizer. Make all attempts to use your grass clippings by leaving them on your lawn. If the grass clippings are not used, do not dispose of them near any wetlands and or water bodies and designate a place to compost them in an upland area.
- 3. If your lawn areas and plant material demand fertilizer, then use low phosphorus organic or slow-release fertilizers. Fertilize in the fall, but in coordination with weather patterns.
- 4. The best defense against pests within the grass is to use an Integrated Pest Management system which consists of beneficial insects (lady bugs, spiders, certain nematodes, and bacteria.)
- 5. Minimize watering the lawn areas. If needed water in the early morning and water deeply and infrequently.
- 6. Collect and dispose of pet wastes rather than allowing them to be washed off with stormwater runoff.

<u>Impervious Surface Maintenance:</u>

Particles that collect on paved surfaces can contain materials that can inhibit water quality. Sweeping sand and debris from the parking lot is a good housekeeping measure that will remove gross pollutants and should be undertaken a minimum of twice per year. DEP recommends frequent sweeping of parking lots in high traffic areas as an integral part of stormwater management.

1. The parking lots shall be swept at least twice a year. Some property owners sweep their sites more frequently to maintain a neat appearance for customers.

- 2. Accumulated leaves and grass clippings shall also be removed from the impervious surfaces at a minimum of twice per year.
- 3. In the winter months, CaCl₂ (calcium chloride salt) application shall be limited to the amount necessary to prevent sand from freezing. Sand shall be used sparingly but in sufficient quantity to maintain the parking and loading surface in a safe condition.

Catch Basin and Drainage System Maintenance:

The deep sump catch basins remove floatable trash, petroleum products, and sediments from the stormwater in order to prevent them from reaching the waters of the Commonwealth. They must be inspected and cleaned periodically to be sure they are operating properly.

- 1. Catch basins shall be inspected at a minimum of two times a year (i.e. spring and fall).
- 2. The visual inspection should ascertain that the traps and deflectors are in place and that there are no blockages or obstructions to the inlet and or trap.
- 3. If during the inspection, it is noticed that any of the internal components are damaged or missing, they should be repaired immediately.
- 4. The inspection should also identify evidence of vector infestation (mosquito larvae, for example) and accumulation of hydrocarbons, trash, and sediment in the system.
- 5. A clamshell truck may be used to clean out catch basins after confirming that there is no oil or fuel floatables present. Disposal of the material from the stormwater BMP sumps shall be in accordance with the local municipality's requirements.
- 6. Clean the catch basin and hydrodynamic separator during dry weather conditions when no flow is entering the system. Remove debris, sand, and accumulated trash from the unit's interior and remove the fines from the screen.
- 7. Subsurface structures are confined spaces and only properly trained personnel possessing the proper training and possessing the necessary safety equipment should enter the unit. Confined spaces can contain odorless, colorless poison gas. Take confined entry precautions seriously.

Detention Basin and Open Drainage Swale Maintenance:

Drainage swales and detention basins convey and hold surface stormwater, and their capacity must be maintained regularly to assure proper function to prevent excess runoff and damage to downstream properties.

- 1. Swales and detention basins should be inspected at a minimum of two times a year (i.e. spring and fall).
- 2. The visual inspection should ascertain that the slopes are stable, that no erosion and sedimentation is occurring, and the slopes, dikes, and spillways are structurally intact, are that there are no blockages or obstructions to the flow of stormwater.
- 3. Swales and detention basins shall be mowed at least once per year, and any trees or invasive vegetation should be removed from them on a regular basis. Tree roots can cause structural instability in dikes that are designed to hold water.

Stormwater Construction Site Inspection Report

General Information				
Project Name	Fairlawn Hospital Addit	ion and Renovation		
NPDES Tracking No.	Not Applicable	Location	189 May Street. Worcester, MA	
Date of Inspection		Start/End Time		
Inspector's Name(s)				
Inspector's Title(s)				
Inspector's Contact Information	*****			
Inspector's Qualifications	. 100	-		
Describe present phase of construction	N 90			
Type of Inspection: ☐ Regular ☐ Pre-storm event	☐ During storm even	□ Post-storm e	vent	
	Weather In	formation		
Has there been a storm event since	the last inspection? Q Y	es □ No	,	
If yes, provide: Storm Start Date & Time:	torm Duration (hrs):	Approximate	Amount of Precipitation (in):	
Weather at time of this inspection?	***************************************			
☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☐ Snowing ☐ High Winds ☐ Other: Temperature:				
Have any discharges occurred since the last inspection? □Yes □No If yes, describe:				
Are there any discharges at the time of inspection? No If yes, describe:				

Site-specific BMPs

- Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.
- Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.

	BMP	BMP	ВМР	Corrective Action Needed and Notes
		Installed?	Maintenance	
			Required?	
1	Erosion control barriers	□Yes □No	□Yes □No	
2	Temp. settling basin, if any	□Yes □No	□Yes □No	
3	Catch Basin Inlets, if any	□Yes □No	□Yes □No	
4	Site Entrance Mat, if any	□Yes □No	□Yes □No	
5	Floc Blocks & Jute Mesh, if used	□Yes □No	□Yes □No	
6	Stockpile Protection, if any	□Yes □No	□Yes □No	
7	Site Catch Basins and Manholes, if any	□Yes □No	□Yes □No	
8	Downstream Discharge	☐Yes ☐No	□Yes □No	

	BMP	BMP	BMP	Corrective Action Needed and Notes
		Installed?	Maintenance	
			Required?	
	Point			
9	Slope Stabilization Measures	□Yes □No	□Yes □No	
10		□Yes □No	□Yes □No	***
11		□Yes □No	□Yes □No	
12		□Yes □No	□Yes □No	· · · · · · · · · · · · · · · · · · ·
13		□Yes □No	□Yes □No	
14		□Yes □No	□Yes □No	
15		□Yes □No	□Yes □No	
16		□Yes □No	□Yes □No	
17		□Yes □No	□Yes □No	
18		□Yes □No	□Yes □No	"/-
19		□Yes □No	□Yes □No	
20		□Yes □No	□Yes □No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance	Corrective Action Needed and Notes
			Required?	
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	□Yes □No	□Yes □No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	□Yes □No	□Yes □No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	□Yes □No	□Yes □No	
4	Are discharge points and receiving waters free of any sediment deposits?	□Yes □No	□Yes □No	
5	Are storm drain inlets properly protected?	□Yes □No	□Yes □No	
6	Is the construction exit preventing sediment from being tracked into the driveway/ street?	□Yes □No	□Yes □No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	□Yes □No	□Yes □No	

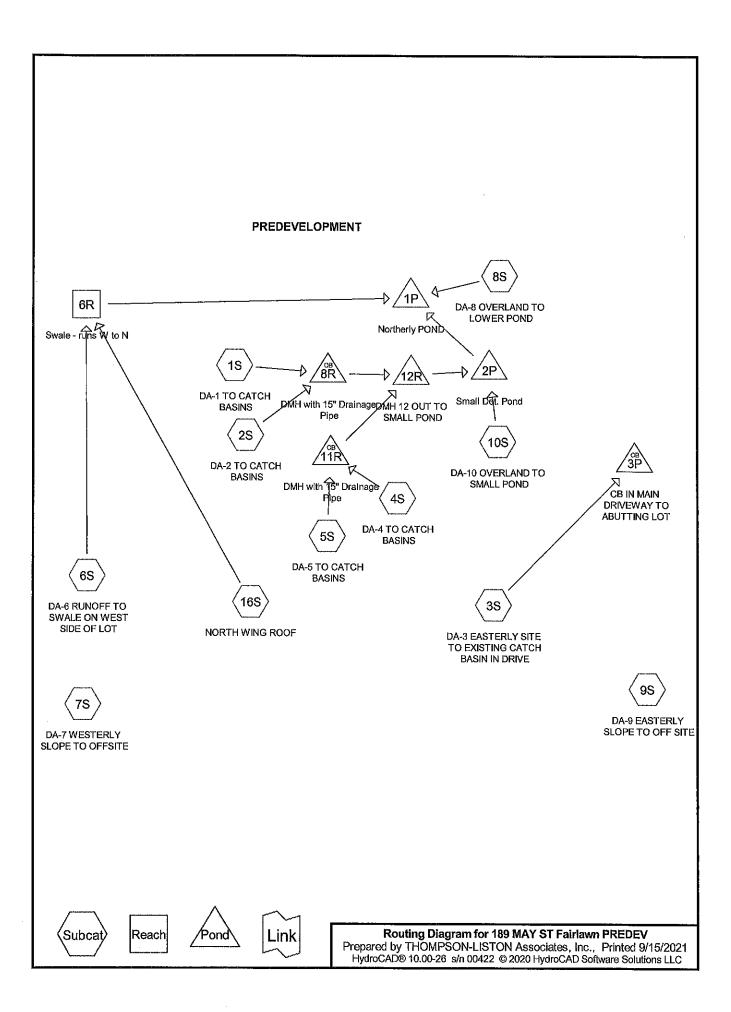
	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes							
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained? To prevent the discharge to the ground and watershed?	□Yes □No	□Yes □No								
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	□Yes □No	□Yes □No								
10	Are materials that are potential stormwater contaminants stored inside or under cover?	□Yes □No	□Yes □No								
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	□Yes □No	□Yes □No								
12	(Other)	□Yes □No	□Yes □No								
			Non-Compli	ance							
Desc	cribe any incidents of non-co	ompliance not des	cribed above:								
		CER	RTIFICATION S	TATEMENT							
	"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." Print name and title:										
	Signature: Date:										

ANNUAL RECORD OF MAINTENANCE

OWNER:F	airlawn R	ehabili	tation	Hospi	tal								
ADDRESS: 189 May Street, Worcester, MA													
INSPECTOR:	PHONE:												
DEVICES/ ARE	AS OPERA	ATION A	AND N	IAINTE	NANC	E:							
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
LANDSCAPING MAINTENANCE PERFORMED	i												
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
IMPERVIOUS S MAINTENANCE PERFORMED	SURFACE	3											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
CATCH BASINS MAINTENANCE PERFORMED	S												
													"
		<u></u>					·						***
ADDITIONAL I	NOTES:			TANGE .									
SIGNATURE:					,,, <u>,</u>	DATE							

ANNUAL RECORD OF INSPECTIONS

OWNER: _	Fairlawn F	<u>tehabi</u>	<u>litatio</u>	n Hosp	ital								
ADDRESS:	189 M	ay Str	eet Str	eet, W	orcest	er MA							
INSPECTOR: PHONE:													
DEVICES/ AR	EAS INSPEC	TED:											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
LANDSCAPIN	IG												<u>-</u>
OBS	SERVATIONS												
	_	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
IMPERVIOUS	SURFACE												
OBS	SERVATIONS										111		
	· · · · · · · · · · · · · · · · · · ·	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
CATCH BASIN	IS												
OBS	SERVATIONS									_			
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
DRAINAGE S	WALE		120	TOPAIX	AIK	LWA	3014	JOL	AUG	JEI	001	NOV	DEC
OBS	SERVATIONS				I								
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
DETENTION E	BASIN	1											
OBS	SERVATIONS												
ADDITIONAL	NOTES:				· · · · · · · · · · · · · · · · · · ·								
SIGNATURE:						DATE					-		



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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.42 cfs @ 12.13 hrs, Volume=

0.033 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN	<u>Description</u>		
*		7,195	98	impervious		
		7,195		100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	·
_	10.0	(icci)	(1010)	(10360)	(618)	Direct Entry

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.55 cfs @ 12.13 hrs, Volume=

0.044 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description			
	*	9,015	98	impervious			
	*	932	74	hsgC grass	, open		
•		9,947	96	Weighted A	verage		
		932		9.37% Perv			
		9,015		90.63% lmp	ervious Ar	эа	
	Tc	Length	Slop	e Velocity	Capacity	Description	
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)	·	
•	10.0		•		·	Direct Entry.	

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656	93	Weighted Average
	11,169		20.44% Pervious Area
	43,487		79.56% Impervious Area

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Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
10.0	·				Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

0.45 cfs @ 12.14 hrs, Volume=

0.036 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description			
4	1	5,894	98	impervious			
*		5,182	74	hsgC grass	, open		
		11,076 5,182 5,894	87	Weighted A 46.79% Per 53.21% Imp	vious Area	эа	
	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description	
	10.0			· · ·		Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

1.73 cfs @ 12.13 hrs, Volume=

0.137 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN	Description	ı		
-	*	28,942	98	impervious		***************************************	
,	*	1,482	74	hsgC grass	, open		
_		30,424	97	Weighted A	verage		
		1,482		4.87% Perv	ious Ārea		
		28,942		95.13% lmp	pervious Ar	ea	
	Тс	Length	Slope		Capacity	Description	
_	(min)	(feet)	(ft/ft) (ft/sec)	(cfs)		
	10.0					Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff =

4.68 cfs @ 12.15 hrs, Volume=

=

0.375 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

Type III 24-hr 2-yr Rainfall=3.14" Printed 9/15/2021

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	Area (sf)	CN	Description			
*	44,913	98	impervious			
*	72,726	72	hsgC wood	ed, trees		
*	12,925	98	roof			
	130,564 72,726 57,838	84	Weighted A 55.70% Per 44.30% Imp	vious Area		
	Tc Length (min) (feet)	Slop (ft/i	•	Capacity (cfs)	Description	
	10.0				Direct Entry,	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff

0.82 cfs @ 12.15 hrs, Volume=

0.065 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description			 	
*		9,091	98	impervious		·	 <u> </u>	
*		13,655	74	hsgC grass	, open			
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	rvious Area			
(Tc min)	Length (feet)	Slop (ft/f		Capacity (cfs)	Description		
	10.0					Direct Entry.	 	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.10 cfs @ 12.13 hrs, Volume=

0.008 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	Α	rea (sf)	CN	Description		
*		1,702	98	impervious		
_		1,702	·	100.00% Im	pervious A	Area
	Тс	Length				Description
	<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry,

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

0.65 cfs @ 12.17 hrs, Volume=

0.056 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN	Description	<u> </u>		
4	*	1,737	98	impervious			
5	*	13,161	74	hsgC grass	, open		
4	k	17,161	72	hsgC wood	ed, trees		
		32,059	74	Weighted A	verage		
		30,322	!	94.58% Per	rvious Area		
		1,737	;	5.42% lmpe	ervious Area	a	
	***		01		0 "	B	
	Tc	Length	Slope	7	Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.0					Direct Entry.	

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.08 cfs @ 12.17 hrs, Volume=

0.007 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Ar	ea (sf)	CN	Description			
*		3,852	74	hsgC grass	, open		
		3,852		100.00% Pe	ervious Are	ea	
	Тс	Length		Velocity		Description	
(m	ոin)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
1	0.0		-	*		Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

0.75 cfs @ 12.13 hrs, Volume=

0.059 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area (sf)	CN [Description			
*	12,979	98 r	oof			
***************************************	12,979		100.00% In	pervious A	rea	
To	Length	Slope	Velocity	Capacity	Description	
(min) (feet)	(ft/ft)	(ft/sec)	(cfs)		
10.0	1	-			Direct Entry	

10.U

Direct Entry,

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 1.58" for 2-yr event

Inflow =

5.42 cfs @ 12.14 hrs, Volume=

0.434 af

Outflow =

5.32 cfs @ 12.19 hrs, Volume=

0.433 af, Atten= 2%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 3.38 fps, Min. Travel Time= 2.5 min Avg. Velocity = 1.29 fps, Avg. Travel Time= 6.4 min

Peak Storage= 787 cf @ 12.19 hrs Average Depth at Peak Storage= 0.31'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75'

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.769 ac, 59.48% Impervious, Inflow Depth > 1.75" for 2-yr event

Inflow = 8.56 cfs @ 12.19 hrs, Volume= 0.697 af

Outflow = 8.83 cfs @ 12.20 hrs, Volume= 0.604 af, Atten= 0%, Lag= 0.9 min

Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.042 af Primary = 8.77 cfs @ 12.20 hrs, Volume= 0.562 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 562.98' @ 12.20 hrs Surf.Area= 2,561 sf Storage= 4,476 cf

Plug-Flow detention time= 58.7 min calculated for 0.604 af (87% of inflow)

Center-of-Mass det. time= 19.1 min (812.2 - 793.1)

<u>Volume</u>	Invert	Avail.	Storage	Storage	Description	
#1	559.44'	7	7,541 cf	Northerl	y Pond from S	wale (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf. <i>A</i> (so	\rea q-ft)		.Store c-feet)	Cum.Store (cubic-feet)	
559 44		n	•	Ω	0	

(00010 1001)	(00.010.1001)	199 17	(1000)
0	0	0	559.44
121	121	431	560.00
2,371	2,250	1,819	562.00
4,012	1,642	2,337	562.79
4,529	517	2,585	563.00
7,541	3,012	3,438	564.00

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<u>Device</u>	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
	-		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=562.98' (Free Discharge) **1**—3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=8.72 cfs @ 12.20 hrs HW=562.98' (Free Discharge) 1=Broad-Crested Rectangular Weir (Weir Controls 8.72 cfs @ 1.10 fps) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.435 ac, 81.68% Impervious, Inflow Depth > 2.14" for 2-yr event Inflow 3.15 cfs @ 12.17 hrs, Volume= 0.256 af Outflow 3.15 cfs @ 12.18 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.5 min 3.15 cfs @ 12.18 hrs, Volume= Primary 0.256 af 0.00 cfs @ 10.00 hrs, Volume= Secondary = 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 577.40' @ 12.18 hrs Surf.Area= 77 sf Storage= 49 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.2 min (782.0 - 781.9)

Volume	Inve	rt Avail.Sto	orage St	Storage Description
#1	576.2	1' 4	57 cf S r	Small Detention Pond (Prismatic) Listed below (Recalc)
Elevatio		Surf.Area (sq-ft)	Inc.Sto	
576.2	1	0		0 0
577.0	0	56		22 22
578.0	0	108		82 104
579.0	0	162	1	135 239
580.0	0	273	2	218 457
Device	Routing	Invert	Outlet E	Devices
#1	Primary	576.21'		Round Culvert to Large Pond

#1	Primary	576.21'	12.0" Round Culvert to Large Pond
			L= 49.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flow Area= 0.79 sf
#2	Secondary	579.00'	120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir
	•		Cv= 2.48 (C= 3.10)

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Type III 24-hr 2-yr Rainfall=3.14" Printed 9/15/2021 Page 8

Primary OutFlow Max=3.06 cfs @ 12.18 hrs HW=577.36' TW=562.97' (Dynamic Tailwater) 1=Culvert to Large Pond (Inlet Controls 3.06 cfs @ 3.89 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.38' TW=559.69' (Dynamic Tailwater) —2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.255 ac, 79.56% Impervious, Inflow Depth > 2.11" for 2-yr event

Inflow =

2.80 cfs @ 12.14 hrs, Volume=

0.220 af

Outflow =

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Atten= 0%, Lag= 0.0 min

Primary

2.80 cfs @ 12.14 hrs, Volume=

0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 578.04' @ 12.13 hrs

Flood Elev= 584.71'

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 577.00'
 12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.65 cfs @ 12.14 hrs HW=577.99' (Free Discharge) —1=Culvert (Inlet Controls 2.65 cfs @ 3.38 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 2.34" for 2-yr event

Inflow =

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Outflow

0.97 cfs @ 12.13 hrs, Volume=

0.077 af, Atten= 0%, Lag= 0.0 min

Primary =

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.88' @ 12.17 hrs

Flood Elev= 585.40'

=

Device Routing Invert Outlet Devices

#1 Primary 580.38' 15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.80 cfs @ 12.13 hrs HW=580.86' TW=580.32' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.80 cfs @ 2.72 fps)

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Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

0.953 ac, 83.94% Impervious, Inflow Depth > 2.18" for 2-yr event

Inflow

2.18 cfs @ 12.14 hrs, Volume=

0.173 af

Outflow

2.18 cfs @ 12.14 hrs, Volume=

0.173 af, Atten= 0%, Lag= 0.0 min

Primary

2.18 cfs @ 12.14 hrs, Volume=

0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.92' @ 12.14 hrs

Flood Elev= 586.35'

Device Routing Invert Outlet Devices 15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500 #1 Primary 581.06 Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.06 cfs @ 12.14 hrs HW=581.89' TW=580.32' (Dynamic Tailwater) **1-Culvert** (Barrel Controls 2.06 cfs @ 3.36 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

=

1.346 ac, 87.05% Impervious, Inflow Depth > 2.22" for 2-yr event 3.15 cfs @ 12.13 hrs, Volume=

0.249 af

Inflow

3.08 cfs @ 12.17 hrs, Volume=

0.249 af, Atten= 2%, Lag= 2.2 min

Primary

Outflow

3.08 cfs @ 12.17 hrs, Volume=

0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 580.36' @ 12.17 hrs Surf.Area= 321 sf Storage= 175 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.0 min calculated for 0.249 af (100% of inflow)

Center-of-Mass det. time= 0.7 min (780.8 - 780.2)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	217 cf	15.0" Round Pipe Storage
			L= 177.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder
		400 of	Total Available Storage

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.95 cfs @ 12.17 hrs HW=580.34' TW=577.35' (Dynamic Tailwater) 1-Culvert (Barrel Controls 2.95 cfs @ 3.95 fps)

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 10

Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.65 cfs @ 12.13 hrs, Volume=

0.052 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	A	rea (sf)	CN [Description		
*		7,195	98 i	mpervious		
		7,195	-	100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	•
-	10.0					Direct Entry,

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.88 cfs @ 12.13 hrs, Volume=

0.070 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description			
	*	9,015	98	impervious			
	*	932	74	hsgC grass	, open		
		9,947 932	96	Weighted A 9.37% Perv			
		9,015		90.63% lmp			
	Tc (min)	Length (feet)	Slop (ft/f		Capacity (cfs)	Description	
•	10.0	(1001)	(101	. , (14500)	(0,0)	Direct Entry.	

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

4.65 cfs @ 12.13 hrs, Volume=

0.366 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656	93	Weighted Average
	11,169		20.44% Pervious Area
	43,487		79.56% Impervious Area

Type III 24-hr 10-yr Rainfall=4.87"

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	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	<u> </u>
	10.0		, .	•	•	Direct Entry.

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

0.83 cfs @ 12.14 hrs, Volume=

0.065 af, Depth> 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description			
4	•	5,894	98	impervious			
4		5,182	74	hsgC grass	, open		
		11,076 5,182 5,894	87	Weighted A 46.79% Per 53.21% Imp			
	Tc (min)	Length (feet)	Slop (ft/fi	•	Capacity (cfs)	Description	
	10.0	•				Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

2.73 cfs @ 12.13 hrs, Volume=

0.216 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description			
*		28,942	98	impervious			
*		1,482	74	hsgC grass	, open		
		30,424 1,482 28,942	97	Weighted A 4.87% Perv 95.13% Imp	ious Area	эа	
	Tc (min)	Length (feet)	Slop (ft/ft	•	Capacity (cfs)	Description	
_	10.0					Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff = 9.0

9.02 cfs @ 12.14 hrs, Volume=

0.713 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

Type III 24-hr 10-yr Rainfall=4.87"

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_	A	rea (sf)	CN	Description				
*		44,913	98	impervious				
*	,	72,726	72	hsgC wood	ed, trees			
*		12,925	98	roof				
	1	30,564	84	Weighted A	verage	····		
		72,726 55.70% Pervious Area						
		57,838		44.30% lmp	ervious Ar	ea		
	To	Longth	Clan	o Volovitu	Conselfu	December		
	Tc	Length	Slope	•	Capacity	Description		
_	(min)	(feet)	(ft/ft	t)(ft/sec)	(cfs)			
	10.0					Direct Entry.	***	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff =

1.57 cfs @ 12.14 hrs, Volume=

0.124 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	Are	ea (sf)	CN	Description			
*		9,091	98	impervious			
*	1	3,655	74	hsgC grass	, open		
	2	2,746	84	Weighted A	verage		
	13,655 60.03% Pervious Area						
		9,091		39.97% lmp	pervious Ar	ea	
	Тс	Length	Slop	e Velocity	Capacity	Description	
	(min)	(feet)	(ft/ft	(ft/sec)	(cfs)	•	
	10.0					Direct Entry.	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.15 cfs @ 12.13 hrs, Volume=

0.012 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	Α	rea (sf)	CN	Description		
*		1,702	98	impervious		
_		1,702		100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft	Velocity (ft/sec)	Capacity (cfs)	Description
_	10.0		. •		•	Direct Entry,

Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

:

1.58 cfs @ 12.15 hrs, Volume=

0.128 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	Are	a (sf)	CN	Description					
4		1,737	98	impervious	pervious				
4	1:	3,161	74	hsgC grass	gC grass, open				
4	17	7,161	72	hsgC wood	C wooded, trees				
	32,059 74 Weighted Average								
30,322 94.58% Pervious Area									
	•	1,737 5.42% Impervious Area				a			
	T - 1	47-	01		0	D			
		_ength	Slope		Capacity	Description			
	(min)	(feet)	(ft/ft) (ft/sec)	(cfs)				
	10.0					Direct Entry.			

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.19 cfs @ 12.15 hrs, Volume=

0.015 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description		
*		3,852	74	าsgC grass	, open	
		3,852		100.00% P	ervious Are	ea
(r	Tc min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	·
	10.0				· · · · · · · · · · · · · · · · ·	Direct Entry,

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.17 cfs @ 12.13 hrs, Volume=

0.093 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	A	rea (sf)	CN [Description		
*		12,979	98 r	oof		
		12,979	1	100.00% Im	pervious A	rea
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry

10.0

Direct Entry,

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 2.94" for 10-vr event

0.806 af

Inflow

Outflow

10.19 cfs @ 12.14 hrs, Volume=

9.99 cfs @ 12.18 hrs, Volume=

0.804 af, Atten= 2%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.11 fps, Min. Travel Time= 2.0 min Avg. Velocity = 1.62 fps, Avg. Travel Time= 5.2 min

Peak Storage= 1,213 cf @ 12.18 hrs Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value = 5.0 1.5 1/ Top Width = 13.75

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area =

4.769 ac, 59.48% Impervious, Inflow Depth > 3.11" for 10-yr event

Inflow

15.21 cfs @ 12.19 hrs, Volume=

1.234 af

Outflow

15.27 cfs @ 12.20 hrs, Volume=

1.142 af, Atten= 0%, Lag= 0.6 min

Discarded =

0.06 cfs @ 12.20 hrs, Volume=

0.044 af

Primary

15.21 cfs @ 12.20 hrs, Volume=

1.098 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.07' @ 12.20 hrs Surf.Area= 2,641 sf Storage= 4.699 cf

Plug-Flow detention time= 38.1 min calculated for 1.141 af (92% of inflow)

Center-of-Mass det. time= 12.4 min (799.8 - 787.5)

Volume	Invert	Avail.Storage	Storage Description
#1	559.44'	7,541 cf	Northerly Pond from Swale (Prismatic) Listed below (Recalc)
ш и			

Cum.Store	Inc.Store	Surf.Area	Elevation
(cubic-feet)	(cubic-feet)	(sq-ft)	(feet)
0	0	0	559.44
121	121	431	560.00
2,371	2,250	1,819	562.00
4,012	1,642	2,337	562.79
4,529	517	2,585	563.00
7,541	3,012	3,438	564.00

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 15

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
	•		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.06' (Free Discharge) **3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=15.06 cfs @ 12.20 hrs HW=563.06' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 15.06 cfs @ 1.33 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.435 ac, 81.68% Impervious, Inflow Depth > 3.50" for 10-yr event Inflow = 5.16 cfs @ 12.17 hrs, Volume= 0.418 af Outflow = 5.07 cfs @ 12.19 hrs, Volume= 0.418 af, Atten= 2%, Lag= 1.1 min Primary = 5.07 cfs @ 12.19 hrs, Volume= 0.418 af Secondary = 0.00 cfs @ 10.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 578.53' @ 12.19 hrs Surf.Area= 137 sf Storage= 169 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.2 min (780.0 - 779.8)

Volume	Inve	rt Avail.Sto	rage Storage	Description	
#1	576.2	1' 45	57 cf Small D	etention Pond (F	Prismatic) Listed below (Recalc)
Elevatio		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
576.2	:1	0	0	0	
577.0	0	56	22	22	
578.0	00	108	82	104	
579.0	00	162	135	239	
580.0	0	273	218	457	
Device	Routing	Invert	Outlet Device	s	
#1	Primary	576.21'	L= 49,0' CPF Inlet / Outlet I		neadwall, Ke= 0.500 575.71' S= 0.0102 <i>'\</i> ' Cc= 0.900
#2	Secondar	y 579.00'	•	.0' long x 1.00' r	ise Sharp-Crested Vee/Trap Weir

Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021

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Primary OutFlow Max=4.99 cfs @ 12.19 hrs HW=578.47' TW=563.06' (Dynamic Tailwater) T-1=Culvert to Large Pond (Barrel Controls 4.99 cfs @ 6.36 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.43' TW=559.80' (Dynamic Tailwater) 2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.255 ac, 79.56% Impervious, Inflow Depth > 3.50" for 10-yr event

Inflow

4.65 cfs @ 12.13 hrs, Volume=

0.366 af

Outflow = Primary

4.65 cfs @ 12.13 hrs, Volume=

0.366 af, Atten= 0%, Lag= 0.0 min

4.65 cfs @ 12.13 hrs, Volume=

0.366 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs. dt= 0.10 hrs. Peak Elev= 578.98' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing Invert Outlet Devices

#1 577.00' Primary

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.40 cfs @ 12.13 hrs HW=578.86' (Free Discharge)

1=Culvert (Inlet Controls 4.40 cfs @ 5.61 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area = Inflow

0.394 ac, 94.56% Impervious, Inflow Depth > 3.70" for 10-yr event

1.53 cfs @ 12.13 hrs, Volume=

0.121 af

Outflow =

1.53 cfs @ 12.13 hrs, Volume=

0.121 af, Atten= 0%, Lag= 0.0 min

Primary

1.53 cfs @ 12.13 hrs, Volume=

0.121 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.10' @ 12.21 hrs

Flood Elev= 585.40'

Device Routing #1 Primary 580.38'

Invert Outlet Devices

15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900

n= 0.012. Flow Area= 1.23 sf

Primary OutFlow Max=1.09 cfs @ 12.13 hrs HW=581.04' TW=580.71' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.09 cfs @ 2.39 fps)

Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021

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Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

0.953 ac, 83.94% Impervious, Inflow Depth > 3.55" for 10-vr event

Inflow

3.55 cfs @ 12.13 hrs, Volume=

0.282 af

3.55 cfs @ 12.13 hrs, Volume= Outflow

0.282 af, Atten= 0%, Lag= 0.0 min

Primary

3.55 cfs @ 12.13 hrs, Volume=

0.282 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.24' @ 12.13 hrs

Flood Elev= 586.35'

Device Routing

Invert Outlet Devices

#1 Primary 581.06 15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500

Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.37 cfs @ 12.13 hrs HW=582.20' TW=580.71' (Dynamic Tailwater)

1=Culvert (Barrel Controls 3.37 cfs @ 3.77 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

5.09 cfs @ 12.13 hrs, Volume=

1.346 ac, 87.05% Impervious, Inflow Depth > 3.59" for 10-yr event

Inflow

0.403 af

Outflow = 4.97 cfs @ 12.17 hrs, Volume=

0.403 af, Atten= 2%, Lag= 2.2 min

Primary =

4.97 cfs @ 12.17 hrs, Volume=

0.403 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.79' @ 12.17 hrs Surf.Area= 224 sf Storage= 303 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.1 min calculated for 0.399 af (99% of inflow)

Center-of-Mass det. time= 0.7 min (778.9 - 778.2)

<u>Volume</u>	Invert	Avail.Storage	Storage Description	
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder	
#2	579.36'		15.0" Round Pipe Storage	
			L= 177.0' S= 0.0038 '/'	
#3	579.36'	117 cf	15.0" Round Pipe Storage	
			L= 95.0' S= 0.0107 '/'	
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder	
		400 of	Total Available Steress	

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.78 cfs @ 12.17 hrs HW=580.74' TW=578.38' (Dynamic Tailwater) **1–1=Culvert** (Barrel Controls 4.78 cfs @ 4.38 fps)

Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.80 cfs @ 12.13 hrs, Volume=

0.063 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN I	Description			
*		7,195	98 i	mpervious			
		7,195		100.00% In	pervious A		
	Тс	Length	Slope	Velocity	Capacity	Description	
<u>(r</u>	min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	,	
,	10.0					Direct Entry,	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.09 cfs @ 12.13 hrs, Volume=

0.086 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description					
*		9,015	98	impervious			. 1782 1112		
*		932	74	hsgC grass	, open				
-	Tc	9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	ious Ārea				
	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description			
	10.0					Direct Entry.			

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

5.78 cfs @ 12.13 hrs, Volume=

0.457 af, Depth> 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656	93	Weighted Average
	11,169		20.44% Pervious Area
	43,487		79.56% Impervious Area

Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021

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Tc (min)		Capacity (cfs)	Description
10.0			Direct Entry.

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff

1.06 cfs @ 12.14 hrs, Volume=

0.084 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	Α	rea (sf)	CN	Description			
. 4	*	5,894	98	impervious			
4	ŧ	5,182	74	hsgC grass	, open		
•-		11,076	87	Weighted A	verage		
		5,182					
		5,894		53.21% lm	pervious Ar	∍a	
	Tc	Length	Slope	•	Capacity	Description	
_	(min)	(feet)	(ft/f1) (ft/sec)	(cfs)		
	10.0					Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

3.35 cfs @ 12.13 hrs, Volume=

0.266 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Α	rea (sf)	CN	Description			
4	ę.	28,942	98	impervious	**		
7	ł	1,482	74	hsgC grass	, open		
		30,424 1,482 28,942	97	Weighted A 4.87% Perv 95.13% Imp	ious Area	эа	
	Tc (min)	Length (feet)	Slop (ft/f	-	Capacity (cfs)	Description	
	10.0		,			Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff 11.79 cfs @ 12.14 hrs, Volume= 0.930 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

Type III 24-hr 25-yr Rainfall=5.95"

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A	rea (sf)	CN	<u>Description</u>			
*	44,913	98	impervious			
*	72,726	72	hsġC wood	ed, trees		
*	12,925	98	roof			
•	130,564	84	Weighted A	verage		
	72,726		55.70% Per	vious Area		
	57,838 44.30% lm				ea	
Тс	Length	Slope	,	Capacity	Description	
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
10.0					Direct Entry,	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff

2.05 cfs @ 12.14 hrs, Volume=

0.162 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN	Description			
	*	9,091	98	impervious			
	*	13,655	74	hsgC grass	, open		
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	vious Area		
_	Tc (min)	Length (feet)	Slope (ft/ft	-	Capacity (cfs)	Description	
	10.0		•	57 · uu · · ·		Direct Entry.	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.19 cfs @ 12.13 hrs, Volume=

0.015 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Α	rea (sf)	CN [Description		
*		1,702	98 i	mpervious		
		1,702	,	100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description
	10.0					Direct Entry

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 21

Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

2.21 cfs @ 12.15 hrs, Volume=

0.177 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN I	<u>Description</u>					
•	*	1,737	98 i	mpervious	-				
•	*	13,161	74 I	nsgC grass	, open				
1	*	17,161	72 I	nsgC wood	ed, trees				
		32,059 30,322 1,737	1,737 98 im 13,161 74 hs 17,161 72 hs 32,059 74 W 30,322 94	94.58% Per	nted Average % Pervious Area 5 Impervious Area				
	Tc (min)	•		-	Capacity (cfs)	Description			
	10.0					Direct Entry,			

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.27 cfs @ 12.15 hrs, Volume=

0.021 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

<i>F</i>	rea (sf)	CN	<u>Description</u>			
*	3,852	74	hsgC grass	, open		
`	3,852		100.00% Pe	ervious Are	ea	
Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)		
10.0	1.5.57		(13000)		Direct Entry,	<u> </u>

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.43 cfs @ 12.13 hrs, Volume=

0.114 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	<u>A</u>	rea (sf)	CN [Description		
4	•	12,979	98 r	oof		
-		12,979		100.00% Im	npervious A	Area
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
_	10.0					Direct Entry

10.0

Direct Entry,

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 3.80" for 25-yr event

Inflow =

13.23 cfs @ 12.14 hrs, Volume=

1.044 af

Outflow =

12.96 cfs @ 12.18 hrs, Volume=

1.041 af, Atten= 2%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.44 fps, Min. Travel Time= 1.9 min Avg. Velocity = 1.77 fps, Avg. Travel Time= 4.7 min

Peak Storage= 1,455 cf @ 12.18 hrs Average Depth at Peak Storage= 0.51'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75'

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area =

4.769 ac, 59.48% Impervious, Inflow Depth > 3.97" for 25-yr event

Inflow =

19.67 cfs @ 12.18 hrs, Volume=

1.576 af

Outflow =

19.71 cfs @ 12.19 hrs, Volume=

1.483 af, Atten= 0%, Lag= 0.5 min

Discarded =

0.06 cfs @ 12.19 hrs, Volume=

0.045 af

Primary =

19.65 cfs @ 12.19 hrs, Volume=

1.438 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.12' @ 12.19 hrs Surf.Area= 2.684 sf Storage= 4.835 cf

Plug-Flow detention time= 31.4 min calculated for 1.482 af (94% of inflow)

Center-of-Mass det. time= 10.2 min (795.6 - 785.4)

Volume	Invert	Avail.Storage	Storage	e Description	
#1	559.44'	7,541 cf	Northe	rly Pond from Sw	ale (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.A (sc	· ·	c.Store ic-feet)	Cum.Store (cubic-feet)	
559.44 560.00 562.00	1,8	0 431 319	0 121 2,250	0 121 2,371	
562.79 563.00 564.00	2,	337 585 438	1,642 517 3,012	4,012 4,529 7,541	

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 23

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
	-		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.19 hrs HW=563.11' (Free Discharge) —3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=19.37 cfs @ 12.19 hrs HW=563.11' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 19.37 cfs @ 1.45 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.435 ac, 81.68% Impervious, Inflow Depth > 4.35" for 25-yr event
Inflow = 6.51 cfs @ 12.17 hrs, Volume= 0.520 af
Outflow = 6.55 cfs @ 12.19 hrs, Volume= 0.520 af, Atten= 0%, Lag= 1.2 min
Primary = 5.86 cfs @ 12.19 hrs, Volume= 0.514 af
Secondary = 0.70 cfs @ 12.20 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.14' @ 12.19 hrs Surf.Area= 177 sf Storage= 262 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.3 min (779.4 - 779.1)

Volume	Inver	t Avail.Sto	age Storage D	Description	
#1	576.21	45	7 cf Small Det	tention Pond (l	Prismatic) Listed below (Recalc)
Elevation (feet		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
576.2		0	0	0	
577.0	Ö	56	22	22	
578.0	D	108	82	104	
579.0	0	162	135	239	
580.0	0	273	218	457	
Device	Routing	Invert	Outlet Devices		
#1	Primary	576.21'	12.0" Round C	Culvert to Larg	e Pond
	-				neadwall, Ke= 0.500
			Inlet / Outlet Inv	vert= 576.21' /	575.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flow		
#2	Secondar	y 579.00'	120.0 deg x 5.0 Cv= 2.48 (C= 3		ise Sharp-Crested Vee/Trap Weir

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 24

Primary OutFlow Max=5.76 cfs @ 12.19 hrs HW=579.06' TW=563.11' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 5.76 cfs @ 7.33 fps)

Secondary OutFlow Max=0.70 cfs @ 12.20 hrs HW=579.12' TW=563.12' (Dynamic Tailwater) —2=Sharp-Crested Vee/Trap Weir (Weir Controls 0.70 cfs @ 1.08 fps)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.255 ac, 79.56% Impervious, Inflow Depth > 4.37" for 25-yr event

Inflow 5.78 cfs @ 12.13 hrs, Volume= 0.457 af

Outflow 5.78 cfs @ 12.13 hrs, Volume= = 0.457 af, Atten= 0%, Lag= 0.0 min

Primary 5.78 cfs @ 12.13 hrs, Volume= 0.457 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 579.80' @ 12.13 hrs

Flood Elev= 584.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	577.00'	12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900
			n= 0.012. Flow Area= 0.79 sf

Primary OutFlow Max=5.48 cfs @ 12.13 hrs HW=579.60' (Free Discharge) -1=Culvert (Inlet Controls 5.48 cfs @ 6.98 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

0.394 ac, 94.56% Impervious, Inflow Depth > 4.55" for 25-yr event Inflow Area =

Inflow 1.88 cfs @ 12.13 hrs, Volume= 0.149 af

Outflow = 1.88 cfs @ 12.13 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min

Primary = 1.88 cfs @ 12.13 hrs, Volume= 0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.43' @ 12.26 hrs

Flood Elev= 585.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	580.38'	15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.52 cfs @ 12.13 hrs HW=581.19' TW=581.15' (Dynamic Tailwater) **T_1=Culvert** (Outlet Controls 0.52 cfs @ 0.87 fps)

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Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area = 0.953 ac, 83.94% Impervious, Inflow Depth > 4.40" for 25-vr event

Inflow 4.41 cfs @ 12.13 hrs, Volume= 0.349 af

Outflow 4.41 cfs @ 12.13 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min

Primary 4.41 cfs @ 12.13 hrs, Volume= 0.349 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.47' @ 12.13 hrs

Flood Elev= 586.35'

Invert Outlet Devices Device Routing #1 Primary 15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500 581.06 Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.18 cfs @ 12.13 hrs HW=582.41' TW=581.15' (Dynamic Tailwater) 1=Culvert (Barrel Controls 4.18 cfs @ 3.93 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

1.346 ac, 87.05% Impervious, Inflow Depth > 4.45" for 25-yr event Inflow Area =

Inflow 6.29 cfs @ 12.13 hrs, Volume= 0.499 af

6.26 cfs @ 12.17 hrs, Volume= Outflow = 0.499 af, Atten= 1%, Lag= 2.3 min

6.26 cfs @ 12.17 hrs, Volume= Primary 0.499 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.33' @ 12.17 hrs Surf.Area= 46 sf Storage= 368 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.1 min calculated for 0.493 af (99% of inflow)

Center-of-Mass det. time= 0.7 min (778.2 - 777.5)

<u>Volume</u>	Invert	Avail.Storage	Storage Description	
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder	
#2	579.36'	217 cf	15.0" Round Pipe Storage	
			L= 177.0' S= 0.0038 '/'	
#3	579.36'	117 cf	15.0" Round Pipe Storage	
			L= 95.0' S= 0.0107 '/'	
#4_	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder	
		400 of	Total Assailable Changes	

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.99 cfs @ 12.17 hrs HW=581.23' TW=578.99' (Dynamic Tailwater) 1=Culvert (Barrel Controls 5.99 cfs @ 4.88 fps)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff =

1.02 cfs @ 12.13 hrs, Volume=

0.081 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN I	Description				
*	·	7,195	98 i	mpervious				
	•	7,195	7,195 100.00% Impervious Area					
<i>(</i> 1	Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
	10.0	(icct)	(1011)	(10300)	(013)	Direct Entry,		

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.40 cfs @ 12.13 hrs, Volume=

0.111 af, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description					
1	k	9,015	98	impervious					
•	*	932	74	hsgC grass	, open				
-		9,947	96	Weighted A	verage				
		932		9.37% Pervious Area					
		9,015		90.63% lmp	pervious Ar	эа			
	Тс	Length	Slop	e Velocity	Capacity	Description			
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)	-			
Ī	10.0					Direct Entry,			

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff =

7.52 cfs @ 12.13 hrs, Volume=

0.595 af, Depth> 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656	93	Weighted Average
	11,169		20.44% Pervious Area
	43,487		79.56% Impervious Area

Type III 24-hr 100-yr Rainfall=7.61"

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_	Tc (min)	•	Slope (ft/ft)	•	Capacity (cfs)	Description	
	10.0				·	Direct Entry,	

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

1.43 cfs @ 12.14 hrs, Volume=

0.112 af, Depth> 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	A	rea (sf)	CN	Description	escription					
4	1	5,894	98	impervious	mpervious					
*		5,182	74	hsgC grass	nsgC grass, open					
		11,076 5,182 5,894	87	Weighted A 46.79% Per 53.21% Imp	rvious Area					
_	Tc (min)	Length (feet)	Slop (ft/f	*	Capacity (cfs)	Description				
Ī	10.0					Direct Entry,	_			

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

4.29 cfs @ 12.13 hrs, Volume=

0.341 af, Depth> 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description				
*		28,942	98	impervious	,			
*		1,482	74	hsgC grass	, open			
•		30,424	97	Weighted A				
		1,482		4.87% Perv				
		28,942		95.13% lmp	pervious An	ea		
	Тс	Length	Slop	e Velocity	Capacity	Description		
(min)	(feet)	(ft/fi) (ft/sec)	(cfs)	-		
	10.0					Direct Entry.		

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff = 16.06 cfs @ 12.14 hrs, Volume=

1.265 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

Type III 24-hr 100-yr Rainfall=7.61"

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	Area (sf)	CN	Description					
*	44,913	98	impervious	mpervious				
*	72,726	72	hsgC woode	hsgC wooded, trees				
*	12,925	98	roof					
	130,564 72,726 57,838	84	Weighted A 55.70% Per 44.30% Imp	vious Area	эа			
	Tc Length (min) (feet)	Slo _l (ft/	•	Capacity (cfs)	Description			
	10.0				Direct Entry.			

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Aı	rea (sf)	CN	Description						
*		9,091	98	impervious	impervious					
*		13,655	74	hsgC grass	nsgC grass, open					
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	rvious Area	эа				
_	Tc (min)	Length (feet)	Slop- (ft/fi		Capacity (cfs)	Description				
	10.0					Direct Entry,				

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.24 cfs @ 12.13 hrs, Volume=

0.019 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN [Description					
*		1,702	98 i	mpervious					
		1,702	,	100.00% Impervious Area					
	Tc	Length	Slope		Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.0					Direct Entry,			

Type III 24-hr 100-yr Rainfall=7.61" Printed 9/15/2021

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

3.23 cfs @ 12.14 hrs, Volume=

0.256 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	A	rea (sf)	CN	Description						
*		1,737	98	impervious	mpervious					
*		13,161	74	hsgC grass	nsgC grass, open					
*		17,161	72	hsgC wood	sgC wooded, trees					
	32,059 74 Weighted Average							_		
		30,322 94.58% Pervious Area								
		1,737		5.42% Impe	ervious Area	a				
	Tc (min)	Length (feet)	Slope (ft/ft	-	Capacity (cfs)	Description				
_	· · · · · · · · ·	(leer)	Livie	., (11/500)	(015)	BL 45.4		_		
	10.0					Direct Entry,				

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.39 cfs @ 12.14 hrs, Volume=

0.031 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN I	<u>Description</u>		
*		3,852	74 I	nsgC grass	, open	
		3,852	,	100.00% Pe	ervious Are	еа
	Tc	Length			Capacity	Description
_(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry,

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.84 cfs @ 12.13 hrs, Volume=

0.146 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN [Description		
*		12,979	98 r	oof		
12,979 100.00% Impervious Area						
	Тс	Length	Slope	Velocity	Capacity	Description
<u>(n</u>	nin)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
1	10.0				·	Direct Entry,

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 5.14" for 100-vr event

Inflow

Outflow

17.90 cfs @ 12.14 hrs, Volume= 17.52 cfs @ 12.18 hrs, Volume= 1.411 af

1.408 af, Atten= 2%, Lag= 2.4 min

Routing by Dvn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.85 fps, Min. Travel Time= 1.7 min Avg. Velocity = 1.97 fps, Avg. Travel Time= 4.2 min

Peak Storage= 1,801 cf @ 12.18 hrs Average Depth at Peak Storage= 0.60'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 1/1 Top Width= 13.751

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area =

4.769 ac, 59.48% Impervious, Inflow Depth > 5.29" for 100-yr event

Inflow

26.38 cfs @ 12.18 hrs, Volume=

2.103 af

Outflow

26.53 cfs @ 12.19 hrs, Volume=

2.010 af, Atten= 0%, Lag= 0.6 min

Discarded =

0.06 cfs @ 12.18 hrs, Volume=

0.046 af

Primary

26.47 cfs @ 12.19 hrs, Volume=

1.964 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.19' @ 12.18 hrs Surf.Area= 2,744 sf Storage= 5.026 cf

Plug-Flow detention time= 23.9 min calculated for 1.988 af (95% of inflow)

Center-of-Mass det. time= 8.0 min (791.3 - 783.3)

Volume	Invert	Avail.Storage	Storage	e Description	
#1	559.44'	7,541 cf	Norther	rly Pond from Swale (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.A (sc		c.Store ic-feet)	Cum.Store (cubic-feet)	
559 44		0	n	<u> </u>	

(Cubic-leet)	(cubic-leet)	(84-11)	(1661)
0	0	0	559.44
121	121	431	560.00
2,371	2,250	1,819	562.00
4,012	1,642	2,337	562.79
4,529	517	2,585	563,00
7,541	3,012	3,438	564.00

Volume

Invert

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Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
	•		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.18 hrs HW=563.18' (Free Discharge)

-3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=25.69 cfs @ 12.19 hrs HW=563.18' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 25.69 cfs @ 1.61 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.435 ac, 81.68% Impervious, Inflow Depth > 5.65" for 100-yr event
Inflow = 8.40 cfs @ 12.15 hrs, Volume= 0.676 af
Outflow = 8.63 cfs @ 12.18 hrs, Volume= 0.676 af, Atten= 0%, Lag= 1.7 min
Primary = 6.09 cfs @ 12.16 hrs, Volume= 0.644 af
Secondary = 2.55 cfs @ 12.18 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.33' @ 12.16 hrs Surf.Area= 198 sf Storage= 298 cf

Plug-Flow detention time= 0.4 min calculated for 0.676 af (100% of inflow) Center-of-Mass det. time= 0.3 min (778.6 - 778.3)

Avail Storage Storage Description

Volune	IIIVe	it Avaii.Sit	naye Storat	ge Description			
#1	576.2	1' 4	57 cf Sma ll	Detention Pond	(Prismatic) Listed below (Recalc)		
Elevatio		Surf.Area	Inc.Store	Cum.Store			
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)			
576.2	1	0	0	0			
577.0	0	56	22	22			
578.0		108	82	104			
579.0		162	135	239			
580.0	0	273	218	457			
Device	Routing	Invert	Outlet Devi	ces			
#1	Primary	576.21'	12.0" Rour	nd Culvert to Larg	ge Pond		
	•		L= 49.0' C	PP, square edge	headwall, Ke= 0.500		
			Inlet / Outle	t Invert= 576.21' /	575.71' S= 0.0102 '/' Cc= 0.900		
				Flow Area= 0.79 s			
#2 Secondary 579.00'			120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.48 (C= 3.10)				

Type III 24-hr 100-yr Rainfall=7.61"

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Primary OutFlow Max=5.99 cfs @ 12.16 hrs HW=579.25' TW=563.17' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 5.99 cfs @ 7.63 fps)

Secondary OutFlow Max=2.25 cfs @ 12.18 hrs HW=579.26' TW=563.18' (Dynamic Tailwater) T-2=Sharp-Crested Vee/Trap Weir (Weir Controls 2.25 cfs @ 1.56 fps)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.255 ac, 79.56% Impervious, Inflow Depth > 5.69" for 100-yr event

Inflow

7.52 cfs @ 12.13 hrs, Volume=

0.595 af

Outflow = 7.52 cfs @ 12.13 hrs, Volume= 0.595 af, Atten= 0%, Lag= 0.0 min

Primary

7.52 cfs @ 12.13 hrs. Volume=

0.595 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.39' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing

Invert Outlet Devices

#1 Primary 577.00' 12.0" Round Culvert L= 68.0' CPP, square edge headwall. Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=7.14 cfs @ 12.13 hrs HW=581.06' (Free Discharge)

1=Culvert (Inlet Controls 7.14 cfs @ 9.08 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

2.42 cfs @ 12.13 hrs, Volume=

0.394 ac, 94.56% Impervious, Inflow Depth > 5.85" for 100-yr event

Inflow Outflow

0.192 af

Primary

2.42 cfs @ 12.13 hrs. Volume=

0.192 af, Atten= 0%, Lag= 0.0 min

2.42 cfs @ 12.13 hrs, Volume=

0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.07' @ 12.24 hrs

Flood Elev= 585.40'

=

Device Routing #1 Primary 580.38'

Invert Outlet Devices

15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.52' TW=581.85' (Dynamic Tailwater) T-1=Culvert (Controls 0.00 cfs)

Type III 24-hr 100-yr Rainfall=7,61"

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Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

0.953 ac, 83.94% Impervious, Inflow Depth > 5.71" for 100-yr event

Inflow

5.72 cfs @ 12.13 hrs, Volume=

0.453 af

Outflow =

0.453 af, Atten= 0%, Lag= 0.0 min

5.72 cfs @ 12.13 hrs, Volume=

Primary

5.72 cfs @ 12.13 hrs, Volume=

0.453 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 583.36' @ 12.15 hrs

Flood Elev= 586.35'

Device Routing #1 Primary Invert Outlet Devices

581.06

15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500

Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.17 cfs @ 12.13 hrs HW=583.23' TW=581.85' (Dynamic Tailwater)

T-1=Culvert (Outlet Controls 5.17 cfs @ 4.22 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

1.346 ac, 87.05% Impervious, Inflow Depth > 5.75" for 100-yr event

Inflow

8.14 cfs @ 12.13 hrs, Volume=

0.645 af

Outflow

8.01 cfs @ 12.15 hrs, Volume=

0.645 af, Atten= 2%, Lag= 1.0 min

Primary

8.01 cfs @ 12.15 hrs, Volume=

0.645 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.00' @ 12.15 hrs Surf.Area= 25 sf Storage= 387 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.1 min calculated for 0.639 af (99% of inflow)

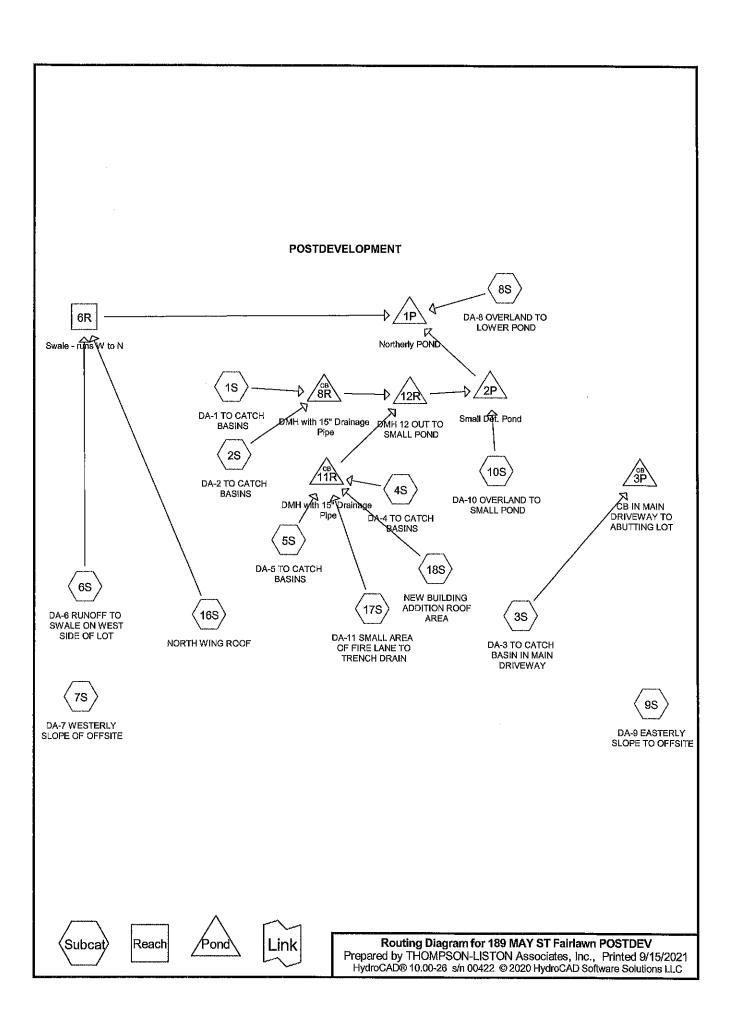
Center-of-Mass det. time= 0.7 min (777.6 - 776.9)

Volume	invert	Avail.Storage	Storage Description	
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder	
#2	579.36'	217 cf	15.0" Round Pipe Storage	
			L= 177.0' S= 0.0038 '/'	
#3	579.36'	117 cf	15.0" Round Pipe Storage	
			L= 95.0' S= 0.0107 '/'	
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder	
		400 -6	Total Association Ottoms as	

499 cf Total Available Storage

<u>Device</u>	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012. Flow Area= 1.23 sf

Primary OutFlow Max=7.61 cfs @ 12.15 hrs HW=581.85' TW=579.24' (Dynamic Tailwater) **1–1=Culvert** (Barrel Controls 7.61 cfs @ 6.20 fps)



189 MAY ST Fairlawn POSTDEV

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.42 cfs @ 12.13 hrs, Volume=

0.033 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area (sf)	CN [Description			
*	7,195	98 i	mpervious			
	7,195	1	00.00% Im	pervious A	rea	
	c Length		Velocity		Description	
(mi	1) (feet)	(ft/ft)	(ft/sec)	(cfs)		
10	.0				Direct Entry,	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.55 cfs @ 12.13 hrs, Volume=

0.044 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

A	rea (sf)	CN	Description						
*	9,015	98	impervious	mpervious					
*	932	74	hsgC grass	, open					
	9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	ious Area	e a				
Tc (min)	Length (feet)	Slop (ft/f	-	Capacity (cfs)	Description				
10.0					Direct Entry.				

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

2.25 cfs @ 12.14 hrs, Volume=

0.177 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area (sf)	CN	Description
*	31,510	98	impervious
*	7,119	74	hsgC grass, open, some mulch
*	6,093	72	hsgC wooded, trees
*	2,258	98	roof
	46,980	91	Weighted Average
	13,212		28.12% Pervious Area
	33,768		71.88% Impervious Area

189 MAY ST Fairlawn POSTDEV

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Tc				Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
10.0					Direct Entry.

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

0.43 cfs @ 12.14 hrs, Volume=

0.034 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Aı	rea (sf)	CN	Description	1		
*		5,963	98	impervious			
*		4,221	74	hsgC grass	, open		
		10,184 4,221 5,963	88	Weighted A 41.45% Per 58.55% Imp	rvious Area		
(Tc min)	Length (feet)	Slop (ft/f	-	Capacity (cfs)	Description	
	10.0		· ·	· · · · ·		Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

1.73 cfs @ 12.13 hrs, Volume=

0.137 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Α	rea (sf)	CN	Description			
•	k	28,942	98	impervious	<u> </u>		
*	*	1,482	74	hsgC grass	, open		
		30,424	97	Weighted A	verage		
		1,482		4.87% Perv			
28,942				95.13% lmp	pervious Are	еа	
	Tc	Length	Slope	,	Capacity	Description	
_	(min)	(feet)	(ft/ft) (ft/sec)	(cfs)_	<u> </u>	
	10.0					Direct Entry.	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff =

4.46 cfs @ 12.15 hrs, Volume=

0.359 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

Type III 24-hr 2-yr Rainfall=3.14"

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_	Area (sf)	CN	Description					
*	43,513	98	impervious					
*	74,098	72	hsgC wooded, trees					
*	12,925	98	roof					
	130,536 74,098 56,438	83	Weighted Average 56.76% Pervious Area 43.24% Impervious Area					
	Tc Length (min) (feet)	Slop (ft/	ppe Velocity Capacity Description l/ft) (ft/sec) (cfs)					
	10.0		Direct Entry,					

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff =

0.82 cfs @ 12.15 hrs, Volume=

0.065 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description					
*		9,091	98	impervious	impervious				
*		13,655	74	hsgC grass	hsgC grass, open				
		22,746	84	Weighted A	verage				
		13,655		60.03% Per	60.03% Pervious Area				
		9,091		39.97% lmp	pervious Ar	rea			
_	Tc (min)	Length (feet)	Slop (ft/f	~	Capacity (cfs)	Description			
	10.0					Direct Entry,			

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.10 cfs @ 12.13 hrs, Volume=

0.008 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Α	rea (sf)	CN	Description					
*		1,702	98	mpervious					
		1,702	·	100.00% Impervious Area					
	Tc	Length			Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.0					Direct Entry,			

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

0.63 cfs @ 12.17 hrs, Volume=

0.054 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description							
•	*	921	98	impervious			_				
*	*	13,218	74	hsgC grass	, open						
	k	17,194	72	hsgC wood	ed, trees						
		31,333	74	Weighted A	/eighted Average						
		30,412		97.06% Per	rvious Area	a					
		921		2.94% Impe	ervious Area	e a					
	Тс	Length	Slope	e Velocity	Capacity	Description					
	(min)	(feet)	(ft/ft	•	(cfs)	•					
-	,	(ieet)	Tivit	/ (10366)	(018)		—				
	10.0					Direct Entry.					

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.08 cfs @ 12.17 hrs, Volume=

0.007 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	Α	rea (sf)	CN	Description		
*		3,852	74	hsgC grass	, open	
		3,852		100.00% P	ervious Are	ea
	Тс	Length	Slope	Velocity	Capacity	/ Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0		•			Direct Entry.

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

0.75 cfs @ 12.13 hrs, Volume=

0.059 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN [Description		
*		12,979	98 r	oof		
		12,979	1	100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	10.0					Direct Entry

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.16 cfs @ 12.14 hrs, Volume=

0.013 af. Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN	Description							
,	•	2,311	98	impervious	mpervious pav						
•	k	1,026	74	pervious gr	pervious grass						
		3,337 1,026 2,311	91	Weighted A 30.75% Per 69.25% Imp	vious Area						
	Tc (min)	Length (feet)	Slop- (ft/fi	•	Capacity (cfs)	Description					
	10.0					Direct Entry,					

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

0.42 cfs @ 12.13 hrs, Volume=

0.033 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN I	Description		
		7,255	98	Roofs, HSC	C C	
	•	7,255	1	100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	
-	10.0	(reer)	(1011)	(IVSEC)	(618)	Direct Entry.

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 1.52" for 2-yr event

Inflow

5.21 cfs @ 12.15 hrs, Volume=

0.418 af

Outflow

5.11 cfs @ 12.19 hrs, Volume=

0.417 af, Atten= 2%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 3.34 fps, Min. Travel Time= 2.5 min Avg. Velocity = 1.28 fps, Avg. Travel Time= 6.5 min

Peak Storage= 765 cf @ 12.19 hrs

Average Depth at Peak Storage= 0.31'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 1.74" for 2-yr event

Inflow = 8.71 cfs @ 12.20 hrs, Volume= 0.725 af

Outflow = 8.83 cfs @ 12.21 hrs, Volume= 0.632 af, Atten= 0%, Lag= 0.7 min

Discarded = 0.06 cfs @ 12.21 hrs, Volume= 0.042 af

Primary = 8.77 cfs @ 12.21 hrs, Volume= 0.590 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 562.98' @ 12.21 hrs Surf.Area= 2,561 sf Storage= 4,476 cf

Plug-Flow detention time= 55.1 min calculated for 0.626 af (86% of inflow) Center-of-Mass det. time= 18.5 min (811.6 - 793.1)

Volume	Inve	ert Avai	I.Storage	Storage D	escription	
#1	559.4	14'	7,541 cf	Northerly	Pond from S	wale (Prismatic) Listed below (Recalc)
Elevatio		Surf.Area		Store	Cum.Store	
(fee	<u>et) </u>	(sq-ft)	(cubi	c-feet)	(cubic-feet)	
559.4	14	0		0	0	
560.0	00	431		121	121	
562.0	00	1,819		2,250	2,371	
562.7	79	2,337		1,642	4,012	
563.0	00	2,585		517	4,529	
564.0	00	3,438		3,012	7,541	
Device	Routing	ln	vert Out	let Devices		
#1	Primary	562	.78' 40. 0	long x 9.	0' breadth Bro	pad-Crested Rectangular Weir
	,			– .		0.80 1.00 1.20 1.40 1.60 1.80 2.00

501100	rtogarig	1111011	Cultor Borrood
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Volume

#2

Secondary

Invert

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Discarded OutFlow Max=0.06 cfs @ 12.21 hrs HW=562.98' (Free Discharge) **3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=8.63 cfs @ 12.21 hrs HW=562.98' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 8.63 cfs @ 1.09 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area =	1.657 ac, 84.05% Impervious, Inflow	Depth > 2.17" for 2-yr event
Inflow =	3.52 cfs @ 12.19 hrs, Volume=	0.300 af
Outflow =	3.51 cfs @ 12.20 hrs, Volume=	0.300 af, Atten= 0%, Lag= 0.6 min
Primary =	3.51 cfs @ 12.20 hrs, Volume=	0.300 af
Secondary =	0.00 cfs @ 10.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 577.58' @ 12.20 hrs Surf.Area= 86 sf Storage= 63 cf

Plug-Flow detention time= 0.2 min calculated for 0.300 af (100% of inflow) Center-of-Mass det. time= 0.2 min (781.8 - 781.6)

Avail.Storage Storage Description

TOIGITIO	1114	717 an. ot	orago otora	go Doodiiption	
#1	576.2	21' 4	157 cf Sma ll	Detention Pond	(Prismatic) Listed below (Recalc)
Elevation (feet		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
576.2	1	0	0	0	
577.0	0	56	22	22	
578.0	0	108	82	104	
579.0	0	162	135	239	
580.0	0	273	218	457	
Device	Routing	Invert	Outlet Dev	ices	
#1	Primary	576.21	12.0" Rou	nd Culvert to Larg	ge Pond
			L= 49.0' (PP, square edge	headwall, Ke= 0.500
			Inlet / Outle	et Invert= 576.21' /	' 575.71' S= 0.0102 '/' Cc= 0.900

Primary OutFlow Max=3.50 cfs @ 12.20 hrs HW=577.57' TW=562.98' (Dynamic Tailwater)
—1=Culvert to Large Pond (Barrel Controls 3.50 cfs @ 4.45 fps)

Cv= 2.48 (C= 3.10)

n= 0.012, Flow Area= 0.79 sf

579.00' 120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.39' TW=559.71' (Dynamic Tailwater)

—2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 1.97" for 2-yr event

Inflow

2.25 cfs @ 12.14 hrs, Volume=

Outflow = 2.25 cfs @ 12.14 hrs, Volume=

0.177 af, Atten= 0%, Lag= 0.0 min

Primary

0.177 af

2.25 cfs @ 12.14 hrs, Volume=

0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Primary

Peak Elev= 577.85' @ 12.14 hrs

Flood Elev= 584.71'

Device Routing #1

Invert Outlet Devices

577.00

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.13 cfs @ 12.14 hrs HW=577.82' (Free Discharge)

-1=Culvert (Inlet Controls 2.13 cfs @ 3.08 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 2.34" for 2-yr event

Inflow

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Outflow = 0.97 cfs @ 12.13 hrs. Volume=

0.077 af, Atten= 0%, Lag= 0.0 min

Primary

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.96' @ 12.20 hrs

Flood Elev= 585.40'

Device Routing Invert Outlet Devices

#1 Primary 580.38 15.0" Round Culvert L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.73 cfs @ 12.13 hrs HW=580.93' TW=580.49' (Dynamic Tailwater)

1=Culvert (Outlet Controls 0.73 cfs @ 2.05 fps)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 2.22" for 2-yr event

Inflow

2.74 cfs @ 12.14 hrs, Volume=

0.217 af 0.217 af, Atten= 0%, Lag= 0.0 min

Outflow Primary 2.74 cfs @ 12.14 hrs, Volume= 2.74 cfs @ 12.14 hrs, Volume=

0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.90' @ 12.14 hrs

Flood Elev= 586.35'

Device Routing

Invert Outlet Devices

#1 Primary 581.06'

15.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.60 cfs @ 12.14 hrs HW=581.87' TW=580.50' (Dynamic Tailwater) —1=Culvert (Inlet Controls 2.60 cfs @ 3.07 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 2.25" for 2-yr event

Inflow = 3.71 cfs @ 12.13 hrs, Volume= 0.294 af

Outflow = 3.45 cfs @ 12.19 hrs, Volume= 0.294 af, Atten= 7%, Lag= 3.5 min

Primary = 3.45 cfs @ 12.19 hrs, Volume= 0.294 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.61' @ 12.19 hrs Surf.Area= 777 sf Storage= 362 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 1.4 min calculated for 0.293 af (100% of inflow)

Center-of-Mass det. time= 0.9 min (780.7 - 779.7)

Volume	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	459 cf	36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'		4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
#7	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
•			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=3.41 cfs @ 12.19 hrs HW=580.60' TW=577.56' (Dynamic Tailwater)

-1=Culvert (Passes 3.41 cfs of 4.17 cfs potential flow)

1-2=Orifice/Grate (Passes 3.41 cfs of 3.80 cfs potential flow)

-3=Orifice/Grate (Orifice Controls 3.41 cfs @ 4.13 fps)

--4=Orifice/Grate (Controls 0.00 cfs)

-5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.65 cfs @ 12.13 hrs, Volume=

0.052 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	- A	rea (sf)	CN [Description		
3	•	7,195	98 i	mpervious		
		7,195	1	100.00% Im	pervious A	Area
	Tc	Length			Capacity	/ Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.88 cfs @ 12.13 hrs, Volume=

0.070 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description						
*		9,015	98	impervious	mpervious					
*		932	74	hsgC grass	hsgC grass, open					
		9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	rious Area	rea				
	Tc (min)	Length (feet)	Slop (ft/ft		Capacity (cfs)	Description				
	10.0					Direct Entry,				

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

3.85 cfs @ 12.14 hrs, Volume=

0.303 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Area (sf)	CN	Description
*	31,510	98	impervious
*	7,119	74	hsgC grass, open, some mulch
*	6,093	72	hsgC wooded, trees
*	2,258	98	roof
	46,980	91	Weighted Average
	13,212		28.12% Pervious Area
	33,768		71.88% Impervious Area

Length

(feet)

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(ft/ft)

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Slope Velocity Capacity

(ft/sec)

<u>(min)</u> 10.0

Тc

(cfs)

Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Description

Runoff

0.78 cfs @ 12.14 hrs, Volume=

0.062 af, Depth> 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfali=4.87"

_	A	rea (sf)	CN	Description							
*		5,963	98	impervious	npervious						
*		4,221	74	hsgC grass	, open						
		10,184	88	Weighted A	verage						
		4,221		41.45% Pei	41.45% Pervious Area						
		5,963		58.55% lmp	ervious Ar	rea					
	Tc (min)	Length (feet)	Slop (ft/f	-	Capacity (cfs)	Description					
	10.0					Direct Entry,					

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

2.73 cfs @ 12.13 hrs, Volume=

0.216 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description				
7	ķ	28,942	98	impervious	mpervious			
4	ŧ	1,482	74	hsgC grass	, open			
Ī		30,424	97	Weighted A	verage			
		1,482		4.87% Perv	ious Area			
		28,942		95.13% lmp	pervious Are	ea		
	Tc	Length	Slop	~	Capacity	Description		
	<u>(min)</u>	(feet)	(ft/f	t) (ft/sec)	(cfs)_			
	10.0					Direct Entry.		

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff =

8.76 cfs @ 12.14 hrs, Volume=

0.694 af, Depth> 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

Type III 24-hr 10-yr Rainfall=4.87"

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	Area (sf)	CN	Description						
*	43,513	98	impervious	impervious					
*	74,098	72	hsgC wood	ed, trees					
*	12,925	98	roof						
	130,536	83	Weighted A	verage					
	74,098		56.76% Per	vious Area	a				
	56,438		43.24% lmp	ervious Are	rea				
	Tc Length (min) (feet)	Slop (ft/	•	Capacity (cfs)	Description				
	10.0				Direct Entry,				

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff =

1.57 cfs @ 12.14 hrs, Volume=

0.124 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	А	rea (sf)	CN	Description					
4		9,091	98	impervious	impervious				
4		13,655	74	hsgC grass	hsgC grass, open				
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	rvious Area		•		
	Tc (min)	Length (feet)	Slop (ft/f	,	Capacity (cfs)	Description			
_	10.0				-	Direct Entry,			

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.15 cfs @ 12.13 hrs, Volume=

0.012 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN I	<u>Description</u>				
*		1,702	98 i	mpervious				
		1,702	,	100.00% lm	pervious A	rea		
		Length		•	Capacity	Description		
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
	10.0			•		Direct Entry.		

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

1.54 cfs @ 12.15 hrs, Volume=

0.125 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfali=4.87"

_	A	rea (sf)	CN	Description					
•	*	921	98	impervious	mpervious				
,	*	13,218	74	hsgC grass	isgC grass, open				
*	k .	17,194	72	hsgC wood	sgC wooded, trees				
	31,333 74 Weighted Average								
		30,412		97.06% Per	vious Area				
		921		2.94% Impe	ervious Area	а			
	Tc (min)	Length (feet)	Slope (ft/ft	•	Capacity (cfs)	Description			
	10.0	Direct Entry,							

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.19 cfs @ 12.15 hrs, Volume=

0.015 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN I	Description			
*		3,852	74 I	nsgC grass	, open		
		3,852	•	100.00% P	ervious Are	ea	
	Tc	-		•	Capacity	•	
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.0					Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.17 cfs @ 12.13 hrs, Volume=

0.093 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	A	rea (sf)	CN	Description		
*	•	12,979	98 r	roof		
		12,979	,	100.00% Im	npervious A	Area
	Тс	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry

10.0

Direct Entry,

Type III 24-hr 10-yr Rainfall=4.87" Prepared by THOMPSON-LISTON Associates, Inc. Printed 9/15/2021

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.27 cfs @ 12.14 hrs, Volume=

0.022 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	A	rea (sf)	CN	Description						
*		2,311	98	impervious	pav					
*		1,026	74	pervious gr	ass					
		3,337	91	Weighted A	verage					
		1,026		30.75% Per	0.75% Pervious Area					
		2,311		69.25% lmp	pervious Ar	ea				
	Тс	Length	Slop	e Velocity	Capacity	Description				
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
	10.0					Direct Entry,				

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

0.66 cfs @ 12.13 hrs, Volume=

0.052 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

A	rea (sf)	CN D	escription					
	7,255	98 F	Roofs, HSG	G C				
•	7,255	5 100.00% Impervious Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
10.0					Direct Entry,			

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 2.87" for 10-yr event

Inflow

9.93 cfs @ 12.14 hrs, Volume=

0.787 af

Outflow

9.75 cfs @ 12.18 hrs, Volume=

0.784 af, Atten= 2%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.08 fps, Min. Travel Time= 2.0 min Avg. Velocity = 1.60 fps, Avg. Travel Time= 5.2 min

Peak Storage= 1,193 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.44'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

4.991 ac, 60.62% Impervious, Inflow Depth > 3.09" for 10-yr event Inflow Area =

Inflow 15.09 cfs @ 12.20 hrs, Volume= 1.285 af

Outflow 15.15 cfs @ 12.20 hrs, Volume= 1.192 af, Atten= 0%, Lag= 0.6 min

0.06 cfs @ 12.20 hrs, Volume= Discarded = 0.044 af 15.09 cfs @ 12.20 hrs, Volume= Primary 1.148 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.06' @ 12.20 hrs Surf.Area= 2,639 sf Storage= 4,695 cf

Plug-Flow detention time= 35.5 min calculated for 1.179 af (92% of inflow) Center-of-Mass det. time= 12.0 min (799.8 - 787.7)

Volume	Invert	Avai	il.Storage	Storage	e Description	
#1	559.44'		7,541 cf	Northe	rly Pond from S	wale (Prismatic) Listed below (Recalc)
Elevation (feet)		.Area sq-ft)		Store c-feet)	Cum.Store (cubic-feet)	
559.44		0		0	0	
560.00		431		121	121	
562.00		1,819		2,250	2,371	
562.79	:	2,337		1,642	4,012	
563.00	;	2,585		517	4,529	
564.00	;	3,438		3,012	7,541	

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
**	•		Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Volume

Invert

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Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.06' (Free Discharge) **12.20 hrs** HW=563.06' (Free Discharge)

Primary OutFlow Max=14.96 cfs @ 12.20 hrs HW=563.06' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 14.96 cfs @ 1.33 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 3.53" for 10-yr event Inflow = 5.43 cfs @ 12.21 hrs, Volume= 0.488 af Outflow = 5.32 cfs @ 12.24 hrs, Volume= 0.488 af, Atten= 2%, Lag= 1.6 min Primary = 5.32 cfs @ 12.24 hrs, Volume= 0.488 af Secondary = 0.00 cfs @ 10.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 578.70' @ 12.24 hrs Surf.Area= 146 sf Storage= 193 cf

Avail.Storage Storage Description

Plug-Flow detention time= 0.3 min calculated for 0.483 af (99% of inflow) Center-of-Mass det. time= 0.2 min (780.2 - 780.0)

#1	576.21'	457 cf Small D	etention Pond (Prismat	tic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
576.21	0	0	0		
577.00	56	22	22		
578.00	108	82	104		
579.00	162	135	239		
580.00	273	218	457		

Device	Routing	Invert	Outlet Devices
#1	Primary	576.21'	12.0" Round Culvert to Large Pond
			L= 49.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flow Area= 0.79 sf
#2	Secondary	579.00'	120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir
			Cv= 2.48 (C= 3.10)

Primary OutFlow Max=5.19 cfs @ 12.24 hrs HW=578.62' TW=563.05' (Dynamic Tailwater)
—1=Culvert to Large Pond (Barrel Controls 5.19 cfs @ 6.61 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.45' TW=559.81' (Dynamic Tailwater) 2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 3.37" for 10-yr event

Inflow

3.85 cfs @ 12.14 hrs, Volume=

0.303 af

Outflow = 3.85 cfs @ 12.14 hrs, Volume=

0.303 af, Atten= 0%, Lag= 0.0 min

Primary

3.85 cfs @ 12.14 hrs, Volume=

0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 578.52' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing Invert **Outlet Devices**

#1 577.00' Primary

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.64 cfs @ 12.14 hrs HW=578.43' (Free Discharge)

1=Culvert (Inlet Controls 3.64 cfs @ 4.64 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 3.70" for 10-yr event

Inflow

1.53 cfs @ 12.13 hrs. Volume=

0.121 af

Outflow = 1.53 cfs @ 12.13 hrs, Volume=

0.121 af, Atten= 0%, Lag= 0.0 min

Primary 1.53 cfs @ 12.13 hrs, Volume=

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs. dt= 0.10 hrs.

Peak Elev= 581.61' @ 12.30 hrs

Flood Elev= 585.40'

Device Routing Invert Outlet Devices

#1 Primary 580.38 **15.0" Round Culvert** L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

0.121 af

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.19' TW=581.24' (Dynamic Tailwater)

1=Culvert (Controls 0.00 cfs)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 3.59" for 10-vr event

Inflow

4.44 cfs @ 12.13 hrs, Volume=

0.351 af

Outflow

4.44 cfs @ 12.13 hrs, Volume=

0.351 af, Atten= 0%, Lag= 0.0 min

Primary

4.44 cfs @ 12.13 hrs, Volume=

0.351 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.23' @ 12.13 hrs

Flood Elev= 586.35'

Device Routing

Invert Outlet Devices

#1 Primary

581.06' **15.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.96 cfs @ 12.13 hrs HW=582.19' TW=581.24' (Dynamic Tailwater)
—1=Culvert (Outlet Controls 3.96 cfs @ 4.49 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 3.62" for 10-yr event

Inflow = 5.97 cfs @ 12.13 hrs, Volume= 0.473 af

Outflow = 5.26 cfs @ 12.21 hrs, Volume= 0.473 af, Atten= 12%, Lag= 4.6 min

Primary = 5.26 cfs @ 12.21 hrs, Volume= 0.473 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.55' @ 12.21 hrs Surf.Area= 684 sf Storage= 891 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 1.7 min calculated for 0.472 af (100% of inflow)

Center-of-Mass det. time= 1.3 min (779.2 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	459 cf	36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'		4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
<u>#7</u>	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
	-		Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=5.17 cfs @ 12.21 hrs HW=581.52' TW=578.64' (Dynamic Tailwater)

-1=Culvert (Passes 5.17 cfs of 6.79 cfs potential flow)

1-2=Orifice/Grate (Passes 5.17 cfs of 5.80 cfs potential flow)

-3=Orifice/Grate (Orifice Controls 5.11 cfs @ 6.19 fps)

—4=Orifice/Grate (Orifice Controls 0.05 cfs @ 1.17 fps)
—5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.80 cfs @ 12.13 hrs, Volume=

0.063 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN I	Description			·
2	•	7,195	98 i	mpervious			
		7,195	•	100.00% lm	pervious A	rea	
	Тс	Length		Velocity	Capacity	Description	
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.0	,				Direct Entry.	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.09 cfs @ 12.13 hrs, Volume=

0.086 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	<u>CN</u>	Description			_
*		9,015	98	impervious			
*		932	74	hsgC grass	, open		
		9,947	96	Weighted A	verage		
		932		9.37% Perv	ious Area		
		9,015		90.63% lm	pervious An	rea	
	Тс	Length	Slop	e Velocity	Capacity	Description	
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)		
	10.0					Direct Entry	

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

4.84 cfs @ 12.14 hrs, Volume=

0.381 af, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Area (sf)	CN	Description
*	31,510	98	impervious
*	7,119	74	hsgC grass, open, some mulch
*	6,093	72	hsgC wooded, trees
*	2,258	98	roof
	46,980	91	Weighted Average
	13,212		28.12% Pervious Area
	33,768		71.88% Impervious Area

Slope

(ft/ft)

Length

(feet)

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Capacity

(cfs)

Velocity

(ft/sec)

(min) 10.0

Tc

Direct Entry,

Description

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

1.00 cfs @ 12.14 hrs, Volume=

0.079 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description	1		
*		5,963	98	impervious			
*		4,221	74	hsgC grass	, open		
		10,184 4,221 5,963	88	Weighted A 41.45% Pe 58.55% Imp	rvious Area		
	Tc (min)	Length (feet)	Słop (ft/f	-	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

3.35 cfs @ 12.13 hrs, Volume=

0.266 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN	Description			
3	k	28,942	98	impervious			 ,
2	k	1,482	74	hsgC grass	, open		
		30,424	97	Weighted A	verage		
		1,482		4.87% Perv	ious Ārea		
		28,942		95.13% lmp	pervious Ar	ea	
	Tc (min)	Length (feet)	Slope (ft/ft		Capacity (cfs)	Description	
-	10.0	(1001)	(1011	.) (18360)	(013)	Direct Entry.	
	10.0					Direct Elluv.	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff :

11.53 cfs @ 12.14 hrs, Volume=

0.909 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

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	Are	ea (sf)	CN	Description			
4	4	3,513	98	impervious		-	
*	7	4,098	72	hsgC wood	ed, trees		
*	1	2,925	98	roof			
	13	0,536	83	Weighted A	verage		
	7	4,098		56.76% Per			
	5	6,438		43.24% lmp	ervious Ar	ea	
	т.	l41-	01		0 "	D ' "	
		Length	Slope	•	Capacity	Description	
_	(min)	(feet)	(ft/ft	(ft/sec)	(cfs)		
	10.0					Direct Entry.	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff :

2.05 cfs @ 12.14 hrs, Volume=

0.162 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Ar	ea (sf)	CN	Description				
-	*	9,091	98	impervious			 	· · · · · · · · · · · · · · · · · · ·
•	* /	13,655	74	hsgC grass	, open			
		22,746 13,655 9,091		Weighted A 60.03% Per 39.97% Imp	vious Area			
	Tc (min)	Length (feet)	Slope (ft/ft	•	Capacity (cfs)	Description		
	10.0					Direct Entry.	 	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.19 cfs @ 12.13 hrs, Volume=

0.015 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Aı	rea (sf)	CN I	Description			
*		1,702	98 i	mpervious			
		1,702	•	100.00% Im	pervious A	Area	- ,,,
(n	Tc nin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)		
1	0.0	······ · · · · · · · · · · · · · · · ·	•			Direct Entry,	

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

2.16 cfs @ 12.15 hrs, Volume=

0.173 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN	Description			
*		921	98	impervious			
*		13,218	74	hsgC grass	, open		
*		17,194	72	hsgC wood	ed, trees		
		31,333	74	Weighted A	verage		
		30,412		97.06% Pei	vious Area		
		921		2.94% lmpe	ervious Area	a	
-	Tc (min)	Length (feet)	Slope (ft/ft	•	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.27 cfs @ 12.15 hrs, Volume=

0.021 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN I	Description		
7	•	3,852	74 h			
•		3,852	1	00.00% Pe	ervious Are	'ea
	Tc	Length	Slope	Velocity	Capacity	y Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs))
	10.0					Direct Entry.

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.43 cfs @ 12.13 hrs, Volume=

0.114 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfali=5.95"

	Ar	rea (sf)	CN E	Description		
*		12,979	98 r	oof		
		12,979	,	100.00% Im	pervious A	Area
	Тс	Length	Slope	Velocity	Capacity	Description
(n	nin)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·
	ΛΛ					Discat Entra

10.0

Direct Entry,

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.34 cfs @ 12.14 hrs, Volume=

0.027 af, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN	Description	t							
*		2,311	98	impervious	npervious pav							
*		1,026	74	pervious grass								
		3,337	91	Weighted A	verage							
		1,026		30.75% Pei	rvious Area							
		2,311		69.25% lmp	pervious Ar	ea						
	Tc (min)	Length (feet)	Slope (ft/ft	•	Capacity	Description						
_		(Teet)	HUII) (ft/sec)	(cfs)							
	10.0					Direct Entry,						

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

0.80 cfs @ 12.13 hrs, Volume=

0.064 af. Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

A	rea (sf)	CN I	Description		
	7,255	98 F	Roofs, HSG	S C	
	7,255	1	100.00% Im	npervious A	Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0				•	Direct Entry,

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 3.73" for 25-yr event

Inflow = 12.96 cfs @ 12.14 hrs, Volume=

1.023 af

Outflow

12.71 cfs @ 12.18 hrs, Volume=

1.021 af, Atten= 2%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.42 fps, Min. Travel Time= 1.9 min Avg. Velocity = 1.76 fps, Avg. Travel Time= 4.7 min

Peak Storage= 1,435 cf @ 12.18 hrs Average Depth at Peak Storage= 0.51'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf. Capacity= 106.43 cfs

#3

Discarded

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 3.95" for 25-yr event
Inflow = 19.68 cfs @ 12.19 hrs, Volume= 1.641 af
Outflow = 19.67 cfs @ 12.20 hrs, Volume= 1.548 af, Atten= 0%, Lag= 0.5 min
Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.045 af
Primary = 19.61 cfs @ 12.20 hrs, Volume= 1.503 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.12' @ 12.20 hrs Surf.Area= 2,684 sf Storage= 4,834 cf

Plug-Flow detention time= 30.4 min calculated for 1.547 af (94% of inflow) Center-of-Mass det. time= 9.9 min (795.7 - 785.8)

Volume	Invert	Avail.Stor	age Storage l	Description	
#1	559.44'	7,54	1 cf Northerly	y Pond from S	wale (Prismatic) Listed below (Recalc)
Elevatio		urf.Area (sq-ft) (Inc.Store cubic-feet)	Cum.Store (cubic-feet)	
559.4	4	0	0	0	
560.0	00	431	121	121	
562.0	00	1,819	2,250	2,371	
562.7	7 9	2,337	1,642	4,012	
563.0	00	2,585	517	4,529	
564.0	00	3,438	3,012	7,541	
Device	Routing	Invert	Outlet Devices	3	
#1	Primary	562.78'	40.0' long x 9	.0' breadth Bro	pad-Crested Rectangular Weir
	•		Head (feet) 0.	.20 0.40 0.60	0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.5	0 4.00 4.50 5	.00 5.50
			Coef. (English) 2.46 2.55 2.	70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.6	5 2.65 2.66 2	.67 2.69
#2	Primary	563.30'	40.0' long (Pr	ofile 29) Broad	-Crested Rectangular Weir
			Head (feet) 0.	49 0.98 1.48	

Coef. (English) 3.48 3.50 3.48

559.44' 1.020 in/hr Exfiltration over Horizontal area

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Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.11' (Free Discharge) **3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=19.53 cfs @ 12.20 hrs HW=563.11' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 19.53 cfs @ 1.46 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 4.38" for 25-yr event
Inflow = 7.02 cfs @ 12.21 hrs, Volume= 0.605 af
Outflow = 6.93 cfs @ 12.22 hrs, Volume= 0.605 af, Atten= 1%, Lag= 0.7 min
Primary = 5.95 cfs @ 12.24 hrs, Volume= 0.595 af
Secondary = 1.01 cfs @ 12.21 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.21' @ 12.24 hrs Surf.Area= 185 sf Storage= 276 cf

Plug-Flow detention time= 0.4 min calculated for 0.605 af (100% of inflow) Center-of-Mass det. time= 0.3 min (779.7 - 779.4)

Volume	Invert	Avail.Sto	rage Stor	age Description	
#1	576.21'	4	57 cf Sm a	all Detention Pond	(Prismatic) Listed below (Recalc)
Elevation (feet)		.Area sq-ft)	Inc.Store		
576.21		0	(0	
577.00		56	2:	2 22	
578.00		108	82	2 104	
579.00		162	13	5 239	
580.00		273	218	3 457	
Device R	outing	Invert	Outlet De	vices	

Routing	nvert	Outlet Devices
Primary	576.21'	12.0" Round Culvert to Large Pond
-		L= 49.0' CPP, square edge headwall, Ke= 0.500
		Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900
		n= 0.012, Flow Area= 0.79 sf
Secondary	579.00'	120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir
•		Cv= 2.48 (C= 3.10)
	Primary	Primary 576.21'

Primary OutFlow Max=5.84 cfs @ 12.24 hrs HW=579.12' TW=563.10' (Dynamic Tailwater)
—1=Culvert to Large Pond (Barrel Controls 5.84 cfs @ 7.43 fps)

Secondary OutFlow Max=0.93 cfs @ 12.21 hrs HW=579.15' TW=563.11' (Dynamic Tailwater) —2=Sharp-Crested Vee/Trap Weir (Weir Controls 0.93 cfs @ 1.19 fps)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 4.24" for 25-yr event 0.381 af

Inflow

4.84 cfs @ 12.14 hrs, Volume=

4.84 cfs @ 12.14 hrs, Volume=

0.381 af, Atten= 0%, Lag= 0.0 min

Outflow Primary

#1

4.84 cfs @ 12.14 hrs, Volume=

0.381 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 579.11' @ 12.13 hrs

Primarv

Flood Elev= 584.71'

Device Routing Invert Outlet Devices

577.00'

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.58 cfs @ 12.14 hrs HW=578.97' (Free Discharge)

1=Culvert (Inlet Controls 4.58 cfs @ 5.84 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 4.55" for 25-yr event

Inflow

1.88 cfs @ 12.13 hrs, Volume=

0.149 af

Outflow = 1.88 cfs @ 12.13 hrs, Volume=

0.149 af, Atten= 0%, Lag= 0.0 min

Primary

1.88 cfs @ 12.13 hrs, Volume=

0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.16' @ 12.30 hrs

Flood Elev= 585.40'

Device Routing Invert Outlet Devices

#1 Primary 580.38'

15.0" Round Culvert L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.41' TW=581.72' (Dynamic Tailwater) 1=Culvert (Controls 0.00 cfs)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 4.44" for 25-yr event

Inflow

5.49 cfs @ 12.13 hrs, Volume=

0.435 af 0.435 af, Atten= 0%, Lag= 0.0 min

Outflow Primary

5.49 cfs @ 12.13 hrs, Volume= 5.49 cfs @ 12.13 hrs, Volume=

0.435 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.50' @ 12.10 hrs

Flood Elev= 586.35'

Device Routing Invert Outlet Devices

#1 Primary 581.06'

15.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.56 cfs @ 12.13 hrs HW=582.49' TW=581.72' (Dynamic Tailwater) 1=Culvert (Outlet Controls 4.56 cfs @ 4.08 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 4.47" for 25-yr event

Inflow = 7.37 cfs @ 12.13 hrs, Volume= 0.584 af

Outflow = 6.78 cfs @ 12.21 hrs, Volume= 0.584 af, Atten= 8%, Lag= 4.5 min

Primary = 6.78 cfs @ 12.21 hrs, Volume= 0.584 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 582.10' @ 12.21 hrs Surf.Area= 631 sf Storage= 1.207 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 1.9 min calculated for 0.584 af (100% of inflow)

Center-of-Mass det. time= 1.5 min (778.7 - 777.3)

Volume	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	459 cf	36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'		4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	
			L= 116.0' S= 0.0050 '/'
<u>#7</u>	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=6.71 cfs @ 12.21 hrs HW=582.06' TW=579.15' (Dynamic Tailwater)

-1=Culvert (Passes 6.71 cfs of 8.10 cfs potential flow)

-2=Orifice/Grate (Orifice Controls 6.71 cfs @ 7.06 fps)

-3=Orifice/Grate (Passes < 5.89 cfs potential flow)-4=Orifice/Grate (Passes < 1.29 cfs potential flow)

-5=Sharp-Crested Rectangular Weir (Passes < 0.20 cfs potential flow)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

1.02 cfs @ 12.13 hrs, Volume≃

0.081 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	A	rea (sf)	CN [Description		
,	k	7,195	98 i	mpervious		
_		7,195	1	100.00% lm	npervious A	Area
	Tc	Length				, and the state of
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry.

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.40 cfs @ 12.13 hrs, Volume=

0.111 af, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfali=7.61"

_	A	rea (sf)	CN	Description			
-	*	9,015	98	impervious			
•	*	932	74	hsgC grass	, open		
-		9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	rious Ărea	ea	
_	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description	
_	10.0					Direct Entry.	

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

6.34 cfs @ 12.13 hrs, Volume=

0.501 af, Depth> 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Area (sf)	CN	Description		
*	31,510	98	impervious		
*	7,119	74	hsgC grass, open, some mulch		
*	6,093	72	hsgC wooded, trees		
*	2,258	98	roof		
	46,980	91	Weighted Average		
	13,212		28.12% Pervious Area		
	33,768		71.88% Impervious Area		

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

1.33 cfs @ 12.14 hrs, Volume=

0.105 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfail=7.61"

	A	rea (sf)	CN	Description			
	*	5,963	98	impervious			
	*	4,221	74	hsgC grass	, open		
		10,184	88	Weighted A	verage		
		4,221		41.45% Pei	∿ious Area		
		5,963		58.55% I mp	ervious Ar	ea	
	Тс	Length	Slope	e Velocity	Capacity	Description	
	(min)	(feet)	(ft/ft) (ft/sec)	(cfs)	•	
•	10.0					Direct Entry.	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

4.29 cfs @ 12.13 hrs, Volume=

0.341 af, Depth> 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Area	a (sf)	CN	Description			
*	28	3,942	98	impervious		·	
*	<u> </u>	,482	74	hsgC grass	, open		
_	30	,424	97	Weighted A	verage		
	1	,482		4.87% Perv	ious Area		
	28	3,942		95.13% lmp	ervious Ar	ea e	
	Tc L	ength.	Slope	Velocity	Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.0					Direct Entry.	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff = 15.79 cfs @ 12.14 hrs, Volume=

1.244 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

Type III 24-hr 100-yr Rainfall=7.61"

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	Area (sf)	CN	Description		
*	43,513	98	impervious		
*	74,098	72	hsgC wood	ed, trees	·
*	12,925	98	roof		
	130,536	83	Weighted A	verage	
	74,098		56.76% Per	vious Area	
56,438 43.24% Impervious Area					ea
	Tc Length	Slo	oe Velocity	Capacity	Description
	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)	-

10.0

Direct Entry,

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff =

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	A	rea (sf)	CN	Description			
Ą		9,091	98	impervious	mpervious		
,	•	13,655	74	hsgC grass	sgC grass, open		
_		22,746	84	Weighted A	verage		
		13,655 60.03% Pervious Area					
		9,091		39.97% lmp	pervious Ar	rea	
_	Tc (min)	Length (feet)	Slop (ft/ft	~	Capacity (cfs)	Description	
	10.0		,	.,		Direct Entry,	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.24 cfs @ 12.13 hrs, Volume=

0.019 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description		
3	*	1,702	98	impervious		
Ī	•	1,702		100.00% lm	pervious A	\rea
	Tc	Length				Description
	(min)	(feet)	(ft/ft) (ft/sec)	(cfs)	
	400					Disage Costs

10.0

Direct Entry,

Type III 24-hr 100-yr Rainfall=7.61"

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

3.15 cfs @ 12.14 hrs, Volume=

0.250 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Α	rea (sf)	CN	Description					
,	*	921	98	impervious	mpervious				
•	*	13,218	74	hsgC grass	isgC grass, open				
	*	17,194	72	hsgC wood	egC wooded, trees				
		31,333 30,412 921		Weighted A 97.06% Per 2.94% Impe	vious Area	a			
	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description			
	10.0					Direct Entry,			· · · · · · · · · · · · · · · · · · ·

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.39 cfs @ 12.14 hrs, Volume=

0.031 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Α	rea (sf)	CN	Description			
*		3,852	74	hsgC grass	, open		
		3,852	3,852 100.00% Pervious Area				
	Тс	Length	Slope	Velocity	Capacity	Description	
((min)	(feet)	(ft/ft	(ft/sec)	(cfs)		
	10.0					Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.84 cfs @ 12.13 hrs, Volume=

0.146 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	A	rea (sf)	CN	Description		
. 4		12,979	98	roof		
		12,979	-	100.00% lm	npervious A	Area
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
-	10.0					Direct Entry

10.0

Direct Entry,

Type III 24-hr 100-yr Rainfall=7.61"

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.45 cfs @ 12.13 hrs, Volume=

0.036 af, Depth> 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	A	rea (sf)	CN	Description	Description					
*		2,311	98	impervious	mpervious pav					
*		1,026	74	pervious grass						
		3,337 1,026 2,311	91	Weighted A 30.75% Per 69.25% Imp	rvious Area					
_	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description				
_	10.0					Direct Entry,				

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

1.03 cfs @ 12.13 hrs, Volume=

0.082 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs. dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

A	rea (sf)	CN I	Description			
	7,255	98	Roofs, HSC	C		
	7,255	100.00% Impervious Area				
Tc	Length		Velocity		Description	
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
10.0					Direct Entry,	 ***************************************

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 5.06" for 100-yr event

Inflow

17.63 cfs @ 12.14 hrs, Volume=

1.390 af

Outflow

17.27 cfs @ 12.18 hrs, Volume=

1.387 af, Atten= 2%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.83 fps, Min. Travel Time= 1.7 min Avg. Velocity = 1.96 fps, Avg. Travel Time= 4.3 min

Peak Storage= 1,782 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.60'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

Type III 24-hr 100-yr Rainfall=7.61" Printed 9/15/2021

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 5.27" for 100-yr event

Inflow = 26.48 cfs @ 12.19 hrs, Volume= 2.192 af

Outflow = 26.54 cfs @ 12.20 hrs, Volume= 2.099 af, Atten= 0%, Lag= 0.5 min

Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.046 af Primary = 26.47 cfs @ 12.20 hrs, Volume= 2.053 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.19' @ 12.20 hrs Surf.Area= 2,744 sf Storage= 5,026 cf

Plug-Flow detention time= 23.1 min calculated for 2.076 af (95% of inflow) Center-of-Mass det. time= 7.8 min (791.5 - 783.7)

<u>Volume</u>	Invert	Avail.Sto	rage Storage [Description	
#1	559.44'	7,54	11 cf Northerly	/ Pond from Sv	vale (Prismatic) Listed below (Recalc)
Elevation		.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)	
559.44		0	0	0	
560.00		431	121	121	
562.00	,	1,819	2,250	2,371	
562.79	:	2,337	1,642	4,012	
563.00	;	2,585	517	4,529	
564.00	;	3,438	3,012	7,541	
Device R	outing	Invert	Outlet Devices		

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Type III 24-hr 100-yr Rainfall=7.61" Printed 9/15/2021

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Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.18' (Free Discharge) T-3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=26.28 cfs @ 12.20 hrs HW=563.18' (Free Discharge) -1=Broad-Crested Rectangular Weir (Weir Controls 26.28 cfs @ 1.62 fps) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 5.69" for 100-yr event Inflow 8.71 cfs @ 12.21 hrs, Volume= 0.786 af Outflow 9.12 cfs @ 12.21 hrs, Volume= 0.786 af, Atten= 0%, Lag= 0.0 min 6.07 cfs @ 12.21 hrs, Volume= Primary 0.739 af 3.05 cfs @ 12.21 hrs, Volume= Secondary = 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs. dt= 0.10 hrs. Peak Elev= 579.32' @ 12.21 hrs Surf.Area= 198 sf Storage= 297 cf

Plug-Flow detention time= 0.4 min calculated for 0.778 af (99% of inflow) Center-of-Mass det. time= 0.3 min (779.2 - 778.9)

Volume	Inver	t Avail.Sto	rage Storage D	Description	
#1	576.21	' 4	57 cf Small Det	tention Pond (Pi	rismatic) Listed below (Recalc)
Elevation	-	urf.Area	Inc.Store	Cum.Store	
(feet	[)	(sq-ft)	(cubic-feet)	(cubic-feet)	
576.2	1	0	0	0	
577.0	0	56	22	22	
578.0	0	108	82	104	
579.0	0	162	135	239	
580.0	0	273	218	457	
Device	Routing	Invert	Outlet Devices		
#1	Primary	576.21'	12.0" Round C	Culvert to Large	Pond
	,			•	adwall, Ke= 0.500
•					75.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flow		
#2	Secondar	y 579.00'	•)' long x 1.00' ris	se Sharp-Crested Vee/Trap Weir

Primary OutFlow Max=6.06 cfs @ 12.21 hrs HW=579.31' TW=563.18' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 6.06 cfs @ 7.71 fps)

Secondary OutFlow Max=2.88 cfs @ 12.21 hrs HW=579.31' TW=563.18' (Dynamic Tailwater) T-2=Sharp-Crested Vee/Trap Weir (Weir Controls 2.88 cfs @ 1.69 fps)

Type III 24-hr 100-yr Rainfall=7.61"

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 5.58" for 100-vr event

Inflow

6.34 cfs @ 12.13 hrs, Volume=

0.501 af

Outflow

6.34 cfs @ 12.13 hrs, Volume=

0.501 af, Atten= 0%, Lag= 0.0 min

Primary

6.34 cfs @ 12.13 hrs, Volume=

0.501 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.27' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing

Invert Outlet Devices

#1 Primary 577.00 12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=6.02 cfs @ 12.13 hrs HW=580.03' (Free Discharge)

-1=Culvert (Inlet Controls 6.02 cfs @ 7.66 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 5.85" for 100-yr event

Inflow

2.42 cfs @ 12.13 hrs, Volume=

0.192 af 0.192 af, Atten= 0%, Lag= 0.0 min

Outflow Primary 2.42 cfs @ 12.13 hrs, Volume= 2.42 cfs @ 12.13 hrs, Volume=

0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 583.35' @ 12.31 hrs

Flood Elev= 585.40'

Device Routing Invert Outlet Devices

Primary #1

580.381 **15.0" Round Culvert** L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.85' TW=582.54' (Dynamic Tailwater) T-1=Culvert (Controls 0.00 cfs)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 5.75" for 100-yr event

Inflow

7.10 cfs @ 12.13 hrs, Volume=

0.563 af, Atten= 0%, Lag= 0.0 min

Primary

Outflow

7.10 cfs @ 12.13 hrs, Volume= 7.10 cfs @ 12.13 hrs, Volume=

0.563 af

0.563 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 583.94' @ 12.27 hrs

Flood Elev= 586.35'

Device Routing Invert Outlet Devices

#1 Primary

581.06' **15.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500

Type III 24-hr 100-yr Rainfall=7.61"

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012. Flow Area= 1.23 sf

Primary OutFlow Max=4.46 cfs @ 12.13 hrs HW=583.24' TW=582.55' (Dynamic Tailwater) 1=Culvert (Outlet Controls 4.46 cfs @ 3.64 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

1.569 ac, 88.79% Impervious, Inflow Depth > 5.78" for 100-yr event

Inflow

9.52 cfs @ 12.13 hrs, Volume= 0.755 af

Outflow

8.36 cfs @ 12.21 hrs, Volume=

0.755 af, Atten= 12%, Lag= 4.7 min

Primary

8.36 cfs @ 12.21 hrs, Volume=

0.755 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 583.25' @ 12.21 hrs Surf.Area= 502 sf Storage= 1,721 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 2.1 min calculated for 0.747 af (99% of inflow)

Center-of-Mass det. time= 1.7 min (778.3 - 776.7)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	459 cf	36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
•			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
#7	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder
		0.404 -4	Total Assailable Office

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
	-		Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=8.25 cfs @ 12.21 hrs HW=583.16' TW=579.31' (Dynamic Tailwater)

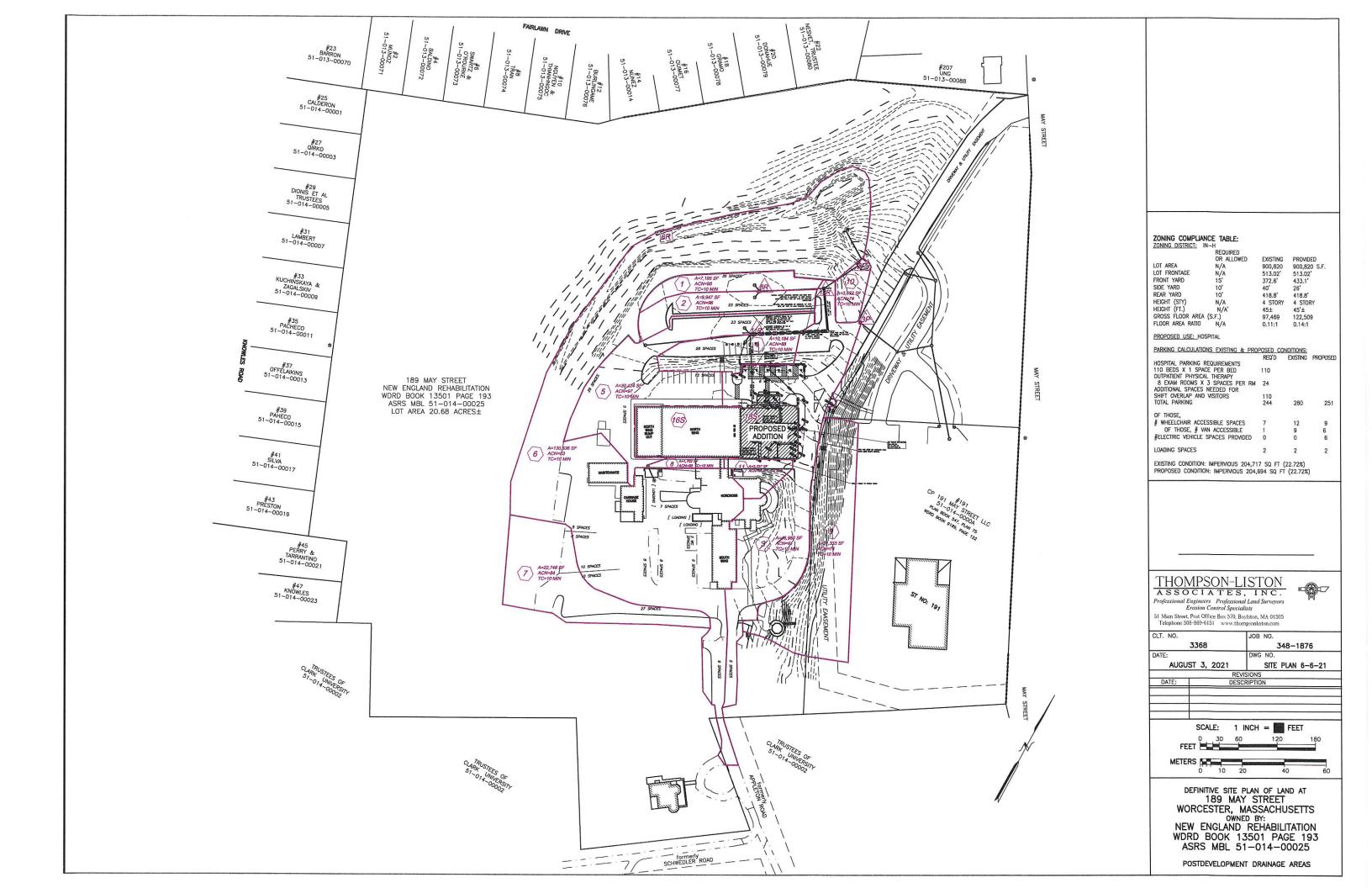
1=Culvert (Passes 8.25 cfs of 10.23 cfs potential flow)

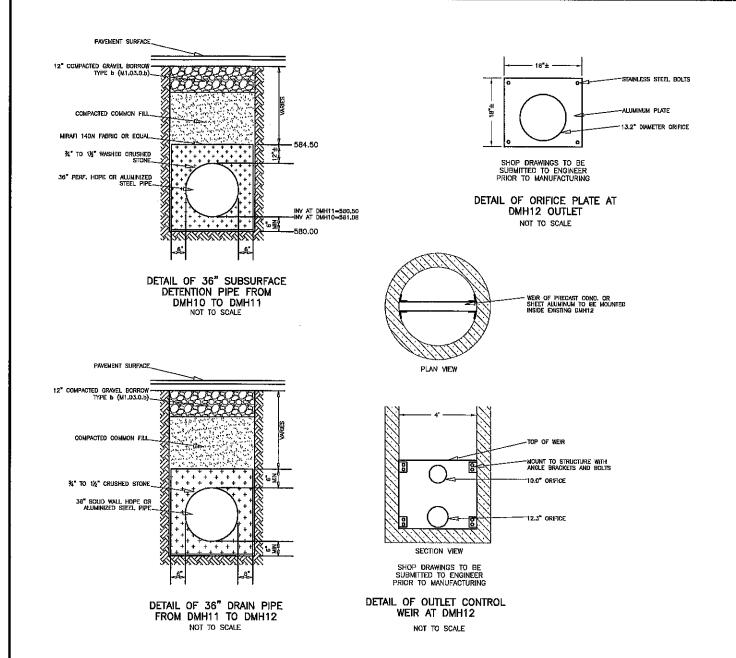
1—2=Orifice/Grate (Orifice Controls 8.25 cfs @ 8.68 fps)

-3=Orifice/Grate (Passes < 7.21 cfs potential flow) -4=Orifice/Grate (Passes < 3.04 cfs potential flow)

-5=Sharp-Crested Rectangular Weir (Passes < 16.10 cfs potential flow)







- NOTES:

 1. THE MATERIALS, METHODS, AND WORKMANSHIP OF ALL SEWER, DRAIN, AND WATER PIPES PROPOSED HEREON, INCLUDING ALL WORK WITHIN THE PUBLIC STREETS, TRENCHES AND PAVEMENT PATCHES, SHALL COMPLY WITH THE STANDARD DETAILS AND SPECIFICATIONS OF THE WORCESTER DEPARTMENT OF PUBLIC WORKS.

 2. UNLESS OTHERWISE NOTED, THE CONSTRUCTION MATERIALS DESCRIBED HEREIN REFER TO THE MASSACHUSETTS DOT, HIGHWAY DEPARTMENT, SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

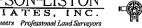
 3. PAVEMENT REPAIRS IN THE DRIVE AISLES SHALL BE HOT MIX ASPHALT CONCRETE, TYPE 1, 1—1/2" TOP COURSE %" AGGREGATE, OVER 2—1/2" DENSE BINDER, INTERMEDIATE AGGREGATE. (M3.11.00)

 3. PAVEMENT REPAIRS WITHIN PARKING SPACES SHALL BE HOT MIX ASPHALT CONCRETE, TYPE 1, 1" TOP COURSE %" AGGREGATE, OVER 2" DENSE BINDER,

- BE HOT MIX ASPHALT CONCRETE, TYPE I, 1" TOP COURSE %" AGGREGATE, OVER 2" DENSE BINDER, INTERMEDIATE AGGREGATE. (M.3.11.00)
 4. FLOWABLE FILL IN ROAD TRENCHES SHALL MEET THE REQUIREMENTS OF THE CITY OF WORCESTER DEPARTMENT OF PUBLIC WORKS.
 5. CEMENT CONCRETE SHALL BE 4,000 PSI, ¾" AGGREGATE, MIN 610 LBS CEMENT PER CY (M4.02.00)

- 5. CEMENT CONCRETE SHALL BE 4,000 PSI, ¾"
 AGGREGATE, MIN B10 LBS CEMENT PER CY
 (M4.02.00)
 6. REFER TO LANDSCAPE DRAWINGS FOR SOIL
 PREPARATION, PLANTINGS, SEED MIX, AND DENSE MIX
 SURFACING SPECIFICATIONS.
 7. DRAINAGE PIPE SHALL BE DR18PVC FROM CATCH
 BASIN TO MANHOLE AND REINFORCED CONCRETE PIPE
 ELSEWHERE.
 8. SANITARY SEWER PIPE OUTSIDE THE BUILDING
 ENVELOPE SHALL BE SDR35 PVC. CONNECTIONS TO
 EXISTING SERVICE SHALL BE MADE IN THE MANNER
 AND WITH MATERIALS ACCEPTABLE TO THE
 WORCESTER DPW.
 9. FIRE PROTECTION WATER SERVICE SHALL BE INSIDE
 THE BUILDING.
 10. DOMESTIC WATER SERVICE SHALL BE INSIDE THE
 BUILDING.
 11. TRASH AND RECYCLABLES WILL BE STORED IN
 CLOSED CONTAINERS IN THE EXISTING LOADING AREA.
 12. ALL TREES AND SHRUBS PLANTED SHALL BE ASIAN
 LONGHORNED BEETLE AND EMERALD ASH BORER
 RESISTANT VARIETIES.
 13. THE IMPERAVOUS AREA IS APPROXIMATELY XXXXX S.F.
 IN THE EXISTING CONDITION AND APPROXIMATELY
 XXXXX S.F. IN THE PROPOSED.

THOMPSON-LISTON ASSOCIATES, INC.



Professional Engineers Professional Land Surveyors Erosion Control Specialists 51 Main Street, Post Office Box 570, Boylston, MA 01505 Telephone 508-869-6151 www.thompsonliston.com

CLT. NO.	JOB NO.
3368	348-1876
DATE:	DWG NO.
AUGUST 3, 2021	SITE PLAN 6-6-21

	REVI	SIONS
DATE:		RIPTION
	-	
-		
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DEFINITIVE SITE PLAN OF LAND AT 189 MAY STREET WORCESTER, MASSACHUSETTS OWNED BY:
NEW ENGLAND REHABILITATION WDRD BOOK 13501 PAGE 193 ASRS MBL 51-014-00025

DRAINAGE REPORT

for

189 MAY ST, WORCESTER, MA

Job #348-1876 Client #3368

September 14, 2021

THOMPSON-LISTON ASSOCIATES, INC.

Professional Engineers Professional Land Surveyors
Erosion Control Specialists

51 Main Street, Post Office Box 570 Boylston, Massachusetts 01505-0570 Telephone 508-869-6151 FAX 508-869-6842 www.thompsonliston.com





AMM 9/14/21





Professional Engineers Professional Land Surveyors
Erosion Control Specialists
51 Main Street, Post Office Box 570
Box Iston, Massachusetts, 01505-0570

Boylston, Massachusetts 01505-0570
Telephone 508-869-6151 FAX 508-869-6842
www.thompsonliston.com

Drainage Report

for

New England Rehabilitation Services of Central Massachusetts, Inc. Proposed redevelopment of the site at 189 May Street Worcester, Massachusetts

September 14, 2021

Project Description

The site is located on the south-westerly side of May Street, south-easterly of Fairlawn Drive and north-westerly of Hadwen Arboretum at Clark University. The property is presently owned by New England Rehabilitation Services of Central Massachusetts, INC. It presently serves as a hospital.

The Applicant, New England Rehabilitation Services of Central Massachusetts, Inc., proposes to construct an addition onto the existing north wing of the hospital with associated ambulance access bay, walkway and entryway for pedestrian use, and several new islands and parking reconfiguration in order to allow for safe and efficient flow of vehicle and pedestrian traffic. On the southerly side of the site, additional landscaped area and walkways are proposed leading to an existing gazebo. On the westerly side of the site, existing pavement is proposed to be removed in order to plant additional grass.

This report compares the drainage conditions of the proposed development to the predevelopment conditions of the site. The predevelopment condition includes the most recent improvements that were made to the site in the 2004-2005 time frame, when the parking lot was expanded and .the drainage system was improved.

Soils on this site are categorized on the United States Department of Agriculture (USDA) Web Soil Survey soil maps as being "Paxton fine sandy loam" soils with 3 to 8 percent slopes in most areas and 8 to 15 percent slopes in remaining areas. In actuality, the geotechnical borings show an underlying soils with fines in the range of 15% to 40%. As with some other hilltop sites in the area, the glacial till in these situations is very dense, and with the high percentage of fines is highly expansive with frost. The site soils are unsuitable for any type of infiltration systems. For the purpose of the drainage study, we have categorized the soils as hydrologic soil group "C" soils based on the soil maps and properties of the Paxton soils.

Methodology

In order to evaluate the existing and proposed hydrologic conditions of the site, we have employed the HydroCADTM stormwater modeling software, which emulates the United States Department of Agriculture, Soil Conservation Service (SCS) hydrograph method as outlined in Technical Release 20 (1982). We have used the SCS modified soil cover complex method of evaluating cover conditions and underlying soil features in developing runoff curve numbers (RCN), and have determined Times of Concentration (ToC), using the methods described in the SCS's National Engineering Handbook, Section 4, Hydrology (1985). Each watershed with its Area, RCN and ToC, is described as a "Subcatchment" in HydroCADTM.

Drainage Report for Fairlawn Hospital 189 May Street, Worcester September 14, 2021 Page 2

HydroCAD™ uses the Storage-Indication method for routing flows from "Subcatchment" areas through "Reaches" and "Ponds." Reaches are overland flow paths, pipe segments, or stream segments. Ponds are areas that collect water, such as basins, ponds, or swales where outlet devices control outflow.

Rainfall was determined from the maps in the National Oceanic and Atmospheric Administration (NOAA), <u>ATLAS 14 Point Precipitation Frequency Estimates</u> for the locus. The SCS's Type III Rainfall Distribution is used for these calculations and is described in SCS <u>Technical Release 55</u> (1986). The 2-, 10-, 25- and 100-year return frequency storms were studied with 24-hour rainfalls of 3.14, 4.87, 5.95 and 7.61 inches respectively.

Design Points

The design points for this report consist of the northerly pond that the swale leads into, the slope that runs westerly before the start of the swale, the catch basin on the driveway near the entrance to the northerly parking, and the abutting easterly parking lot that collects runoff from the slope near the gazebo. These locations were chosen because they are locations where runoff from the site ends up and they can be compared for pre- and post-development.

Flows to the northerly pond are modeled as pond #1P in the pre- and post-development conditions. Flows to the westerly slope are modeled as Subcatchment 7 in the pre- and post-development conditions. Flows to the catch basin in the driveway are modeled as Pond 3 on the pre- and post-development conditions. Flows to the easterly abutting parking lot are modeled as Subcatchment 9 on the pre- and post-development conditions.

Calculation Summary and Comparison of Flows:

In all of the storms studied, the 2-, 10-, 25- and 100-year storms, the runoff leaving the site in the post-development condition will not exceed the peak runoff in the existing (pre-development) condition.

The following table compares the pre- and post-development flows at the Design Points:

Respectfully submitted,

THOMPSON-LISTON ASSOCIATES, INC.

Patrick .J. Healy, P.E.

Project Manager / Civil Engineer

Drainage Report for Fairlawn Hospital 189 May Street, Worcester September 14, 2021 Page 3

TABLE A Runoff Summaries for Storm Events						
Design Point	2-YR	10-YR	25-YR	100-YR		
1. Northerly	Pond					
Pond 1P pre	8.77 cfs	15.21 cfs	19.65 cfs	26.47 cfs		
Pond 1P post	8.77	15.09	19.61	26.47		
2. Catch Basi	in in Driveway					
Reach 9R pre	2.80 cfs	4.65 cfs	5.78 cfs	7.52 cfs		
Reach 9R post	2.67	4.50	5.64	7.37		
3. Abutting E	Casterly Lot					
Reach 10R pre	0.65 cfs	1.58 cfs	2.21 cfs	3.23 cfs		
Reach 10R post	0.63	1.54	2.16	3.15		
4. Westerly Slope						
Reach 7R pre	0.82 cfs	1.57 cfs	2.05 cfs	2.80 cfs		
Reach 7R post	0.82	1.57	2.05	2.80		





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Erosion Control Specialists
51 Main Street, Post Office Box 570
Boylston, Massachusetts 01505-0570
Telephone 508-869-6151 FAX 508-869-6842
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Stormwater Standards Compliance Statement Fairlawn Hospital Addition and Renovation 189 May Street Worcester, Massachusetts

September 14, 2021

A portion of the existing building entrance canopy and paved areas will be removed and replace dwith a building addition that will serve as the new main entrance and ambulance entrance to the hospital, as well as new rooms on the upper floors. The renovations and expansion will not result in additional patient beds or uses, but will convert several multi-patient rooms, and new rooms to private or semi-private rooms. Portions of the lot will be redeveloped to construct the addition, relocate accessible parking spaces and walks, and improve emergency vehicle access. As a redevelopment project, the project will comply with the Massachusetts DEP Stormwater Standards only to the extent practicable, as described below. Where a particular Standard does not apply to the project, an explanation is provided. Each statement either describes compliance with those Standards that are applicable to the scope of work proposed.

STANDARD 1 – NO NEW UNTREATED DISCHARGES

Runoff from the site includes runoff from roofs, paved areas, and landscaped areas. Stormwater runoff from existing paved driveways and roofs currently runs off in four separate directions, which we evaluated and for which we designed mitigating measures to limit the postdevelopment runoff to or below the predevelopment levels. Much of the area of redevelopment flows to two drainage systems, to the existing parking lot drainage system toward an existing detention basin to the north, and to catch basins in the main driveway which connection downslope toward May street through easements on the adjacent property to the east. To the southeast and southwest some areas contribute overland flow to adjacent properties. In the proposed condition, the runoff from impervious driveways will generally slope and runoff it the same directions. The roof runoff of the new building addition and patient drop off canopy will be connected by pipes to the existing parking lot drainage system to the north. The piped drainage system will then be retrofitted to constrict the pipe leading out the existing surface detention basin, in order to avoid divert the discharge through a subsurface detention/infiltration BMP. Although there is a net increase of 7,013 sq. ft. of impervious area, the actual peak rate and volume of runoff will be less in the proposed condition. No new untreated discharges are proposed.

STANDARD 2 – PEAK RATE ATTENUATION

As described in the report and hydrologic calculations, the peak rate of runoff will be mitigated for the 2, 10, 25, and 100-year storms. so there is no contribution to off-site flooding.

STANDARD 3 – RECHARGE

Though the redevelopment results in a modest increase to impervious cover, and equivalent area of impervious parking lot will be removed on the west edge of the parking lot, so the project does not result in an increase in impervious cover. Soil types present on the site are identified as Paxton fine sandy loam, which would normally be classified as hydrologic group C soil. However, the soil borings in the area of development indicate dense glacial till with inordinate fine content, between

Stormwater Standards Compliance 189 May Street, Worcester, MA September 14, 2021 Page 2

25%-40% passing the #200 sieve. This type of soil is unsuitable for any type of infiltration systems whether open air or subsurface. As such, we will not be proposing any recharge.

STANDARD 4 – WATER QUALITY

Standard 4 is also based up on the amount of new impervious surfaces being created on a site. As stated in the prior section, no increase in the impervious cover is proposed by this project.

In this case, all runoff from the altered impervious parking area and walks will continue to be directed to deep sump catch basins and walks. Once small area of the fire lane will be collected into a trench drain with a sump, and will be piped around the ambulance bay. The roof runoff is considered clean and is not subject to the Standard 4 requirements.

STANDARD 5 - LUHPPLs

Site does not fall into this category.

STANDARD 6 – CRITICAL AREAS

Site is not in or near a critical area as defined in the DEP Stormwater Handbook.

STANDARD 7 – REDEVELOPMENT

As a redevelopment site, the modest increase in impervious cover is mitigated through the reduction of paved surface in another area of the site. The redevelopment of the site will represent an improvement in stormwater management in terms of reduction of the peak rate of flow through additional mitigation. In addition, there will be an O&M plan in place for improved long term water quality and protection of stormwater infrastructure.

STANDARD 8 - CONSTRUCTION PERIOD CONTROLS

An Erosion and Sedimentation Control Plan has been developed, and is shown on the plans. Details of the BMPs are shown on the Detail Sheet of the Site Plan.

STANDARD 9 - OPERATION AND MAINTENANCE PLAN

An Operation and Maintenance Program covering the construction period and post-construction period maintenance and inspection requirements of the proposed stormwater structures has been written and is included herewith.

STANDARD 10 - PROHIBITION OF ILLICIT DISCHARGES

Provisions will be made to prevent illicit non-stormwater discharges to waters of the Commonwealth. The owner is cognizant of the effects upon the environment of improper disposal of wastewater, process waste, raw materials, toxic and hazardous substances, oil and grease, and seeks to prevent damage to the environment. Such substances if present shall be stored in covered containers or within parked vehicles on the site and will not be exposed to rainfall. Spill kits will be stored on site and replenished as necessary to prevent the migration of potential contaminants.

Prepared by:

Patrick J. Healy, P.E.

THOMPSON-LISTON ASSOCIATES, INC



Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

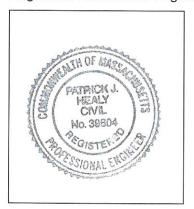
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signature and Date

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	exploring Dject Type: Is the application for new development, redevelopment, or a mix of new and evelopment?
	New development
V	Redevelopment
	Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued) LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project: ✓ No disturbance to any Wetland Resource Areas ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks) Reduced Impervious Area (Redevelopment Only) ✓ Minimizing disturbance to existing trees and shrubs ☐ LID Site Design Credit Requested: ☐ Credit 1 Credit 2 Credit 3 Use of "country drainage" versus curb and gutter conveyance and pipe ☐ Bioretention Cells (includes Rain Gardens) ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs) ☐ Treebox Filter ■ Water Quality Swale ☐ Grass Channel Green Roof Other (describe):

Standard 1: No New Untreated Discharges

\checkmark	No new untreated discharges
	Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
abla	Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook inc



CI	Checklist (continued)			
Sta	andard 2: Peak Rate Attenuation			
	Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding. Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.			
	Calculations provided to show that post-development peak discharge rates do not exceed pre- development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.			
Sta	indard 3: Recharge			
V	Soil Analysis provided.			
	Required Recharge Volume calculation provided.			
	Required Recharge volume reduced through use of the LID site Design Credits.			
	Sizing the infiltration, BMPs is based on the following method: Check the method used.			
	☐ Static ☐ Simple Dynamic ☐ Dynamic Field ¹			
	Runoff from all impervious areas at the site discharging to the infiltration BMP.			
	Runoff from all impervious areas at the site is <i>not</i> discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.			
	Recharge BMPs have been sized to infiltrate the Required Recharge Volume.			
	Recharge BMPs have been sized to infiltrate the Required Recharge Volume <i>only</i> to the maximum extent practicable for the following reason:			
	Site is comprised solely of C and D soils and/or bedrock at the land surface			
	M.G.L. c. 21E sites pursuant to 310 CMR 40.0000			
	☐ Solid Waste Landfill pursuant to 310 CMR 19.000			
	Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.			
	Calculations showing that the infiltration BMPs will drain in 72 hours are provided.			
	Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.			

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



_	
C	hecklist (continued)
St	andard 3: Recharge (continued)
	The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
	Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.
Sta	andard 4: Water Quality
Th • • • • • • • • • • • • • • • • • • •	e Long-Term Pollution Prevention Plan typically includes the following: Good housekeeping practices; Provisions for storing materials and waste products inside or under cover; Vehicle washing controls; Requirements for routine inspections and maintenance of stormwater BMPs; Spill prevention and response plans; Provisions for maintenance of lawns, gardens, and other landscaped areas; Requirements for storage and use of fertilizers, herbicides, and pesticides; Pet waste management provisions; Provisions for operation and management of septic systems; Provisions for solid waste management; Snow disposal and plowing plans relative to Wetland Resource Areas; Winter Road Salt and/or Sand Use and Storage restrictions; Street sweeping schedules; Provisions for prevention of illicit discharges to the stormwater management system; Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL; Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan; List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
	A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent. Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
	is within the Zone II or Interim Wellhead Protection Area
	is near or to other critical areas
	is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
	involves runoff from land uses with higher potential pollutant loads.
	The Required Water Quality Volume is reduced through use of the LID site Design Credits.
	Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



CI	Checklist (continued)					
Sta	Standard 4: Water Quality (continued)					
	The BMP is sized (and calculations provided) based on:					
	☐ The ½" or 1" Water Quality Volume or					
	The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.					
	The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.					
	A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.					
Sta	ndard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)					
	The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report. The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted <i>prior</i> to the discharge of stormwater to the post-construction stormwater BMPs.					
	The NPDES Multi-Sector General Permit does <i>not</i> cover the land use.					
	LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.					
	All exposure has been eliminated.					
	All exposure has <i>not</i> been eliminated and all BMPs selected are on MassDEP LUHPPL list.					
	The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.					
Sta	ndard 6: Critical Areas					
	The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.					
	Critical areas and BMPs are identified in the Stormwater Report.					



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

C	hecklist (continued)
Sta ext	andard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum tent practicable The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
	Limited Project
	 Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area. Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
	☐ Bike Path and/or Foot Path
	☑ Redevelopment Project
	Redevelopment portion of mix of new and redevelopment.
	Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report. The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures:
- Erosion and Sedimentation Control Plan Drawings;
- · Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- · Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



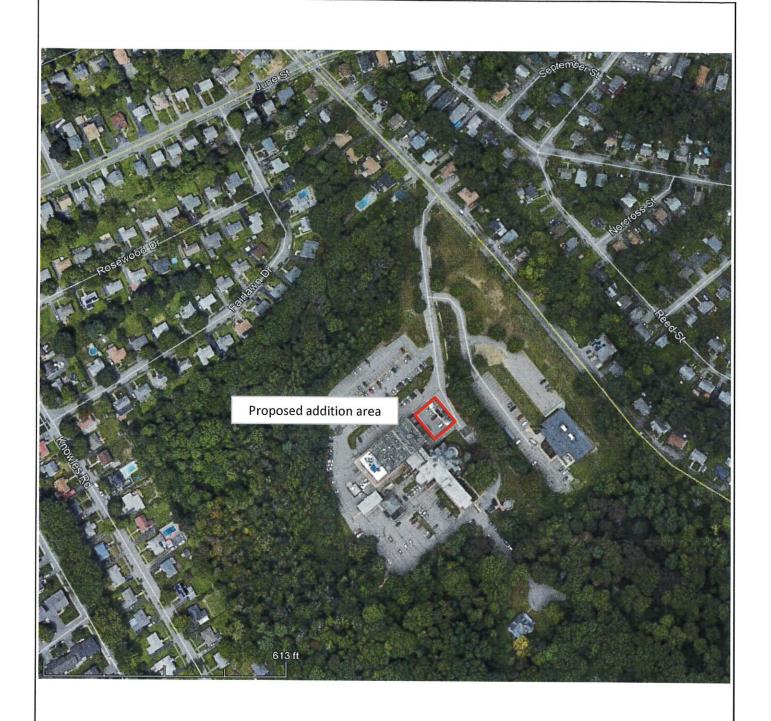
C	necklist (continued)
Sta (co	andard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control ntinued)
	The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has <i>not</i> been included in the Stormwater Report but will be submitted <i>before</i> land disturbance begins.
Ø	The project is <i>not</i> covered by a NPDES Construction General Permit.
	The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report. The project is covered by a NPDES Construction General Permit but no SWPPP been submitted.
	The SWPPP will be submitted BEFORE land disturbance begins.
Sta	ndard 9: Operation and Maintenance Plan
Ø	The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
	□ Name of the stormwater management system owners;
	Party responsible for operation and maintenance;
	☐ Schedule for implementation of routine and non-routine maintenance tasks;
	☐ Plan showing the location of all stormwater BMPs maintenance access areas;
	Description and delineation of public safety features;
	Estimated operation and maintenance budget; and
	Operation and Maintenance Log Form.
	The responsible party is not the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
	A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
	A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.
Sta	ndard 10: Prohibition of Illicit Discharges
Ø	The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
	An Illicit Discharge Compliance Statement is attached;
	NO Illicit Discharge Compliance Statement is attached but will be submitted prior to the discharge of any stormwater to post-construction BMPs.



MAP LEGEND MAP INFORMATION Area of Interest (AOI) Spoil Area The soil surveys that comprise your AOI were mapped at Area of Interest (AOI) ٥ Stony Spot Soils Very Stony Spot Warning: Soil Map may not be valid at this scale. 00 Soil Map Unit Polygons Wet Spot Enlargement of maps beyond the scale of mapping can cause 8 Soil Map Unit Lines misunderstanding of the detail of mapping and accuracy of soil Other Δ Soil Map Unit Points line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed ... Special Line Features Special Point Features Water Features (0) Please rely on the bar scale on each map sheet for map Streams and Canals Borrow Pit measurements. Transportation Clay Spot × Source of Map: Natural Resources Conservation Service +++ Web Soil Survey URL: Closed Depression 0 Interstate Highways Page 1 Coordinate System: Web Mercator (EPSG:3857) Gravel Pit X Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts **US Routes** Gravelly Spot ٨ Major Roads distance and area. A projection that preserves area, such as the 20 Local Roads Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required. 50000 Lava Flow 1 Background This product is generated from the USDA-NRCS certified data as Marsh or swamp Aerial Photography 44 The last of the version date(s) listed below. Mine or Quarry 要 Soil Survey Area: Worcester County, Massachusetts, Miscellaneous Water 0 Northeastern Part Survey Area Data: Version 15, Jun 10, 2020 Perennial Water 0 Soil map units are labeled (as space allows) for map scales Rock Outcrop Saline Spot Date(s) aerial images were photographed: Sep 12, 2014—Sep Sandy Spot : .: Severely Eroded Spot = The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor Sinkhole Slide or Slip shifting of map unit boundaries may be evident. Sodic Spot

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
31A	Walpole sandy loam, 0 to 3 percent slopes	4.4	15.1%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	8.4	28.3%
305C	Paxton fine sandy loam, 8 to 15 percent slopes	13.8	46.7%
622C	Paxton-Urban land complex, 8 to 15 percent slopes	1,2	4.2%
625C	Hinckley-Urban land complex, 0 to 15 percent slopes	1.7	5.7%
Totals for Area of Interest		29.5	100.0%



Yankee Engineering & Testing, Inc.

10 Mason Street Worcester, MA 10609

Phone: (508) 831-7404 • Fax: (508) 831-7388

Project: Fairlawn Rehabilitation Hospital

Location: 189 May Street, Worcester, MA

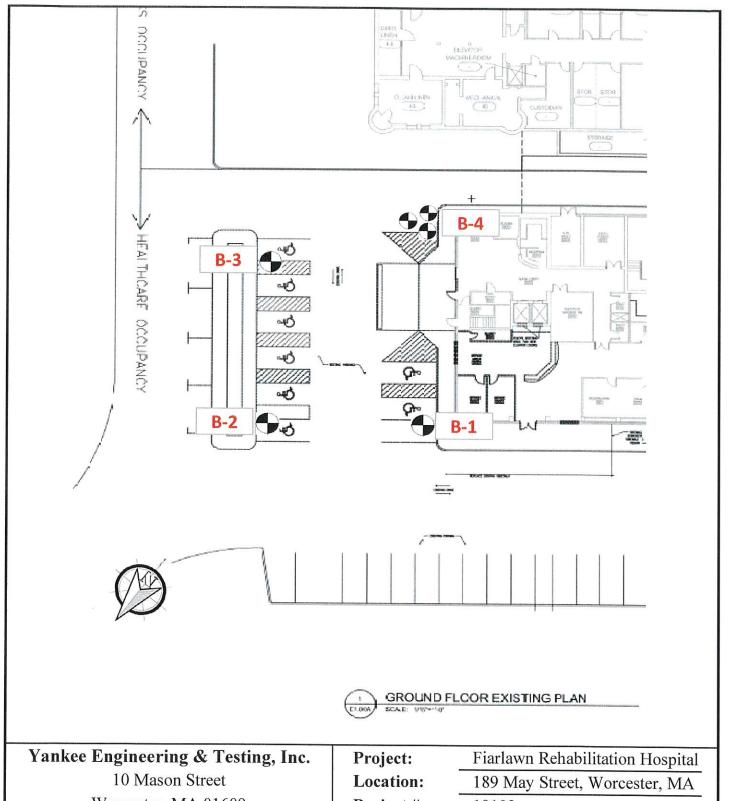
Project #: 19103

Date: May 10, 2021

Client: Encompass Health

FROM: Google Earth Aerial photo

SITE LOCUS PLAN FIGURE 1 Approx. Scale See Map Scale



Worcester, MA 01609

Phone: (508) 831-7404

Fax: (508) 831-7388

Project #:

19103

Date:

May 10, 2021

Client:

Encompass Health

FROM: Schematic Site Plan

BORING LOCATION PLAN FIGURE 2 Approx. Scale:

See map scale

Boring #	B - 1
Sheet #	1 of 1
Location:	Addition west
Elevation:	≈ 597 ¹
Drill Date:	5/10/2021

Client:	Encompass Hea	alth				I'm	IODT.				
Project:			-1	- i		Type	SPT			water Observat	
•	Fairlawn Rehabi			_	Drilling	Size	2" I.D.	Depth (ft)	Casing at	Stabilization Po	eriod
Project Address:	189 May Street,	vvorcester, M	Α	-	Type	Hammer	140 lbs	No GW	l n/a	Linon bori	ng completion
Project No.:	19103					Fall	30"	110 011	100	Opon born	ng completion
Depth	Boring Sa	mpling Data		Strata							
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Rig Type:	Mobile B57 Truc	k	0 - 2	Very Soft		0-3	Very Loos	e l		nal information	7011 dated 3/11/21
Driller:	Mr. Rich Bonetti		2 - 4	Soft		4-9	Loose				on existing ground
Helper:	Mr. Josh Goodal	e	5 - 8	Medium Stiff		10 - 29	Medium D	ense l	surface	Cicration based	on colouing ground
Inspector:	Mr. Joel Morin		9 - 15	Stiff		30 - 49	Dense		#		
Client Rep.:	Mr. Joeseph Dur	rkin	16 - 30	Hard		50+/ft	Very Dens	e			

Boring #	B - 2
Sheet#	1 of 1
Location:	Addition north
Elevation:	≈ 597¹
Drill Date:	5/10/2021

Client:		-	مالالمما المد			1						Dill Date.	3/10/2021
		Encompas				_		Туре	SPT			water Observat	
Project:		Fairlawn F				_	Drilling	Size	2" I.D.	Depth (ft)	Casing at	Stabilization Po	eriod
Project Ad		189 May S	treet, vvo	rcester, M	A	_	Туре	Hammer	140 lbs	10'	n/a	Linon hori	ng completion
Project No	0.:	19103	•					Fall	30"		IVA	Opon boil	ig completion
Depth		Bori	ng Sampli	ing Data		Strata				·			
(ft)	No.	Depth (ft)	Pen. (in)	Rec. (in)	Blows/6"	Change		Sample De	scriptions &	& Geotechnic	al Observat	tions	Remarks
1	S-1	0-2	24	11	4 - 3		3" Grav/bl	ack, reclaimed	gravel/aspha	alt			4" Asphalt
2			Transchiptories of the Title P.	OTAN TERRETARES SERVING SERVING	5-9	The second second second second				nd some gravel	The second secon	eninamanani (126-1200anani)	FIII
3	S-2	2 - 4	24	20	15 - 21	2'		1 but dense				.	Native
4	SOFT OF THE PARTY	auri 1800/08/sarrengerena 477 vac	WEAMSHATTE		20 - 22		WAR SON BUILTING	ANNERS AND PROPERTY TO	odanska rejinska kraljeva od predgo	A STATE OF THE PROPERTY AND A STATE OF	THE PERSON NAMED OF THE PE	Commence of the Control of the Contr	Antigenterment of the section of the
5 	engeneralisten ett to	A VAN KING SOMETHING THE MET THE THE	SON COMMENTAL SECTION AND ASSESSMENT ASSESSMENT AND ASSESSMENT ASSESSMENT AND ASSESSMENT ASSESSM				ALCOHOLOGICAL PROPERTY OF THE PARTY OF THE P	ALVERTAL METAL TERM STANKE	Markinshi Melihatasaranan menjagan		ander Marie Agent Chairman	TOTAL PROPERTY OF THE PARTY OF	ATTENDED TO STATE OF THE PROPERTY OF THE PROPE
6	S-3	5 - 7	24	16	18 - 36		Same as S-	1 but very dei	nse	engentervision (Self Provide Grant Service	A STATE OF THE PARTY OF THE PARTY OF THE PARTY.	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, WHEN THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, WHEN THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, WHEN THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, WHEN THE OW	Native
	programming translation (see	of 1 Medical Course Course de la company de la company de la company de la company de la company de la company	SECTION SEATER SECTION	CILLED BOOK AND THE SECOND	49 - 41	500000000000000000000000000000000000000				THE SHEET SHEET STREET, ST.	TOTAL STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET,	ALTO TORREST AND AND AND AND AND AND ADDRESS.	STATE OF THE PROPERTY OF THE P
8 xx 10x/20xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	S-4	7 - 7'3"	3	3	50+/3"		Same as S-	1 but very der	nse	CONTROL OF STREET STREET	TAXABLE SEPTIMES VICENSIALING	TO THE STREET, MANAGEMENT AND PROPERTY OF THE STREET, STREET, ASSOCIATION OF STREET, ASSOCI	Native
9 ************************************	THE RESERVE AND A SECOND	PERSONAL A TENERAL ENTRA	de per est anno mente per	paratrastram vikimis		STANDER TO PROPERTY	400	M. Willy (broken to Tierror own			A SANTO COMPANY CONTRACTOR OF THE PARTY OF T	PROTESTICAL PROPERTY OF THE PR	To remain the Committee of Marie State of the Committee o
10	original desirability	TE PERSONAL THE SELECTION OF THE PERSON	AND AND AND AND AND AND AND AND AND AND	TO SERVICE AND A		Z					and the same of th	SECTION OF STREET, STR	A ACTIVATION TO THE PROPERTY OF A SECTION OF THE PARTY OF
11	\$-5	10 - 12	24	14	15 - 17	10'	Same as S-	1 but very der	nse and moist				Native
12	HARRISH BORNE COM-	Chop services in the last of t	CONTRACTOR OF THE PROPERTY.	M PATR I PAREALINIS ENGLISTES	43 - 20	t england and a supply of the	ay salan ang mananan.	Contain description of the party of the last	o de la companya de l	M. Salle Scaling to a sign at some two	Management of the same of the	THE REAL PROPERTY OF THE PROPE	CONTRACTOR CONTRACTOR AND ADMINISTRATION OF THE
13	(\$0190 <u>448</u> 00) (\$190) (\$80	achter and the constant of the const	PRESENTATION OF THE PROPERTY O	THE CHARLES WHEN THE TANK	CTOTAL PRODUCTION AND ADDRESS OF THE	T - MINING STREET, SHIPT OF THE STREET,	CONTRACTOR SPECIAL SPE	MINISTER BEING BERNES	NECONY SERVICE SERVICE PROGRAMMEN	The second secon			CONTRACTOR OF THE CONTRACTOR OF THE PROPERTY O
14	ASSESSION OF THE PARTY OF THE P	THE OF THE PERSONS AND A STREET	OUTSHIRKERT SELENGSTON	ar 2006-t-mountebranes	TANKA 1878年 トレンコングイムシング 首連会	Semanticular designation of the semanticular	A THE SEA SHOW THE PERSON AND ADDRESS.	CONTRACTOR OF STREET	oggangovangenderriked 99 Albida	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Sin and depletions of the second second	A West and a second sec	CHECK OF THE PERSON NAMED IN THE PERSON NAMED
15 16	S-6	15 - 1 7	NAMES OF TAXABLE PARTY.	ovneantaess:	SHOULD SEELES SEELES		- National Company of the Company of	CARROLIC AND AND AND AND AND AND AND AND AND AND	THE PERSON NAMED IN COLUMN TWO	CH STEPHEN STATE A PARTICULAR STATE OF THE S	CONTROL BOOK STATE OF THE PARTY	FEECH AND STATE OF THE STATE OF	
17	2-0	15 - 1/	24	18	10 - 19		Brown/gra	y, moist, dens	se, SILT and S/	ND trace grave	el	***************************************	Native
18	michale miamat de	CONTRACTOR OF STREET	TO THE THE PERSON NAMED AND ADDRESS OF THE PERSON NAMED AND AD	ransamilikis saharana	27 - 3 3	CONTRACTOR STREET, STR		NAMES OF THE PERSON OF THE PER	anamanan menen	OTHER STREET, STORING AND ADDRESS OF THE PARTY OF THE PAR	CO-20/4-W-N-SAMERING CONTRACTOR	. WANTE OF THE BEST BEST OF THE SAME OF TH	STREET AT ANY V SALEST DESCRIPTION OF THE PROPERTY AND A STREET
19	onessaner	COLUMN SERVICES AND CONTRACTOR OF THE COLUMN SERVICES.	TO SEE SHARE SHARE THE		(Walker Lawrence and Commence of the Commence	COMPANY CONTRACTOR DE CONTRACTOR	Winselman angrapang	CANADA MANAGAMAN	A A SHEET OF THE WAY WAS THE WAY TO SHEET THE		CONTRACTOR OF A STREET AND A STREET		ALMANAL DAY TO THE POST OF THE PARTY OF THE
20	Contractor on No. is a substitute of	THE WENCE COST, THE OTHER PARTY	AND THE PROPERTY OF THE PERSON OF	entransionen intermentales	CALLED STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET,	er savustandaktirkeiste ittak	Name and Associated Supering S	ocusposacional sector of reflet	Tropic Science Management and Management		alik japinggi sasa anam anam samba	an was a substance of the substance of t	CONTRACTOR SECURITIES SOCIETATION SECURITIES
21	S-7	20 - 22	24	12	14 - 32	Parting and the Control of the Contr	Carlo and a	Name and Administration of the Control of the Contr	THE CALLS	AND THE PERSON NAMED OF TH	THE RESERVE AND ADDRESS OF THE PARTY OF THE	NECT 101 (1421-1416) SERVICE STATE (SERVICE SERVICE SE	PER TRANSPORTE STATE OF STATE
22	and the state of t	TO TO	annamananian Vita	A CHANGE AND A STREET	32 - 38	Committee of Committee of the Committee of C	Gray, mois	t, very dense,	SIITY SAND TT	ace Blavel	gggwyr ngwerrenn, roll fi hold	+ 9 (Agrammana and Oldh land Shekii, F Hoffican)	Native
23	KANNESKATANISKA	Maria Browning at 100 Maria	Principle of Street Control	TO SERVICE STATE OF THE SERVIC	32-36	22'		Boring toem	instad at 221	in native silty S	AND		
24	TO SECULIARISM	CONTRACTOR OF THE PERSONS	CANDON LIMITADOS ANTONOS AS	CONCRECE DE SECURIO	Californ Anista, Carlos annochesians, ann	desemble survivorem altre	ASSESSED IN THE STREET OF STREET OF STREET	DOTTING COMPANY	midleu at 22	m native sity 5	AND trace gra	nemanantaning	≈ 575¹
25	and the second s	THE SECTION AND PARTY OF	жения портина и при порти на при порти на порти на порти на порти на порти на порти на порти на порти на порти На порти на	ALMERICAN SERVICE AND ADDRESS OF THE PARTY O	THE RESERVE OF THE PERSON NAMED IN COLUMN	and the second s	NAMES OF THE PROPERTY OF THE P	COME AND ASSESSMENT OF THE PARTY OF THE PART	Alleria de la companya William Branch Company Company	NAT ASSESSMENT STATES OF STREET	M. Transcore Sink Side Main Toward	BES DO SUSTAINED TO SUSTAIN THE	
Drilling (Co.:	Soil Ex Co	rp		Coh	esive (blows/f	t)	Cobes	sionless (bl	nws/ft\	a Doforto	on nearly self	
Rig Type		Mobile B57	Truck		0 - 2	Very Soft	-z.c	0 - 3	Very Loos				ort dated 5/17/21
Driller:		Mr. Rich B			2-4	Soft		4-9	Loose	`	ror additio	nal information	on existing ground
Helper:		Mr. Josh G	oodale		5 - 8	Medium Stiff		10 - 29	Medium D	ense	surface	elevation pased (on existing ground
Inspecto	r:	Mr. Joel M	orin		9 - 15	Stiff		30 - 49	Dense	01100	surrace		
Client Re	ер.:	Mr. Joesep	h Durkin		16 - 30	Hard		50+/ft	Very Dens	e l	~		
									/	-			

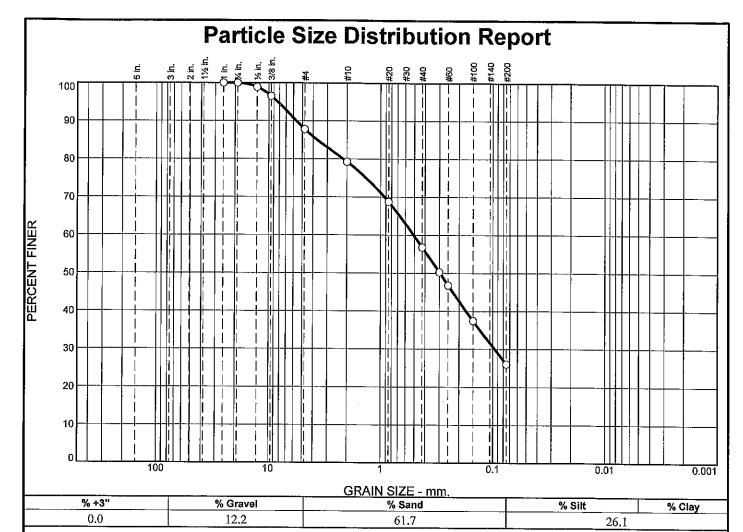
Boring #	B - 3
Sheet#	1 of 1
Location;	Addition east
Elevation:	≈ 598'
Drill Date:	5/10/2021

												<u> </u>	
Client:		Encompass Health					Type SPT Groundwater Obser				water Observati	ons	
Project:			Rehabilitat	ion Hospita	al		Drilling	Size	2" I.D.	Depth (ft)	Casing at	Stabilization Pe	eriod
Project A Project N		189 May S 19103	Street, Wo -	rcester, M.	A		Туре	Hammer Fall	140 lbs 30"	10'	n/a		ng completion
					Strata Change		Sample De	scriptions (& Geotechni	cal Observa	tions	Remarks	
1	S-1	0 - 2	24	12	5 - 14	THE PERSON NAMED OF THE PERSON NAMED IN COLUMN	Company and the second second	amp, sand an	WHEN THE PROPERTY OF THE PARTY	Photography with the received	THE THE PERSON AND TH		4" Asphalt
2		2024-00000 William December Linear	CANCOT MODERATE MANAGEMENT IN	LI MARIN MODERNA MARINE	17 - 15		8" Brown,	, molst, dense,	, silty SAND ar	nd gravel			Fill
1 3	S-2	2 - 4	24	14	18 - 22	2'	Brown, da	mp, very den	se, silty SAND	and gravel			Mathia

(ft)	No.	Depth (ft)	Pen. (in)	Rec. (in)	Blows/6"	Change		sampie Descriptions & Geotechnic	cai Observations	Remarks
1	5-1	0 - 2	24	12	5 - 14		4" Gray, da	amp, sand and gravel/asphalt		4" Asphalt
2	WCIRCLE WINE	TO A COMPANY WEIGHT TO THE WORK A MADE	AND ALL DESCRIPTION OF THE PARTY OF THE PART	LINE NAME OF THE PERSON OF THE	17 - 15		8" Brown,	molst, dense, silty SAND and gravel	TO THE RESERVE OF THE PROPERTY	Fill
3	S-2	2 - 4	24	14	18 - 22	2'	Brown, dar	mp, very dense, silty SAND and gravel		Native
4	William Control				28 - 21		manage resemblying	ederance in the Section of Company and the second Notice of Albacher (Albacher Agency and Albacher (Albacher A	THE TAXABLE PARTIES AND THE PA	CONTRACTOR OF THE PROPERTY OF
5	157651 982285 web 2011 ft	NAT'S THE ROOM OF THE PERSONS FOR THE		THE STREET	The state of the s	CONTRACTOR STREET		geragger page, sammer reach, et Abener W. W. Wein S. A. Region of Transport Contract Manual Wein Str. In Proc. Ale		INTERNATION AND SERVICE STREET, AND SERVICE STREET, AND SERVICE STREET, AND SERVICE STREET, AND SERVICE STREET,
6	S-3	5-7	24	16	44 - 40		Same as S-	2	THE PROPERTY SERVING VANCOUS CONTRACTOR OF THE PROPERTY OF THE	Native
7					40 - 32		Control of Security Security	- A STATE OF THE S	en in Maria programme e sus estados estados estados estados en como estados en como en como en como en como estados en como en	COMPANY OF SHIP SHOULD SHIP SHIP SHIP SHIP SHIP SHIP SHIP SHIP
8	S-4	7-8	12	12	43 - 50+/6"	COMPLETE CONTROL SOLD	Brown, dar	mp, very dense, silty SAND some gravel	enter en esta de la compacta del la compacta del la compacta del la compacta de la compacta de la compacta de la compacta de la compacta de la compacta de la compacta de la compacta de la compacta de la compacta de la compacta de l	Native
9				COCCO-MAN-AMINE D. C.	New York of the Control of the Contr	-	TO THE OWNER OF THE OWNER	THE STATE OF THE PARTY OF THE PROPERTY OF THE STATE OF TH		ALL STREET, ST
10						Χ	grand and street fragility	AN COLUMN TO THE PARTY OF THE STREET PARTY OF THE STREET O	SEE MARKETON TO SECTION OF THE PROPERTY OF THE SECTION OF THE SECT	MANAGEMENT THE TELESCOPE OF A STREET STREET, S
11	S-5	10 - 12	24	14	13 - 14	10'	Same as 5-	2 but medium dense and moist		Native
12					11 - 15		grammandelmarten ukselukka.	TO THE PROPERTY OF THE PROPERT	TO COMPANY STREET, COMPANY COM	The second of the second of the second of the
1.3							An and the second of the second	现实现实现在的现在分词 计设计设计 化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	· 通用的,ACCION 1000000000000000000000000000000000000	efinal receipted all sign and minery. Automobility and a se
14	V:Dominana (v)		Section 1			Control of the Contro	Exercised Lendold Lifetable A. CON \$40	4、元子等,1915年,1916年,1916年,1916年,1916年,1916年,1916年,1916年,1916年,1916年,1916年,1916年,1916年 1916年 - 1917年 -	er der 1615 auf Schafflicher er auch er zu einem der 1914 bet Auflächte Schafflicher ung zu der Aufläch der Au	SERVICE CONTRACTOR CON
15				A. WOODE CO.	**************************************	West of a tree of the control of the	A STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF T	COMMENTATION OF THE PROPERTY O	A THE RESIDENCE OF THE PROPERTY OF THE PROPERT	AND THE PROPERTY OF THE PROPER
16	S-6	15 - 17	24	18	15 - 22	The state of the s	Same as S-	2 but dense	en Cital Distributer, visibilität eta oliministiän en saantaan tilistään ja teriteritätätää olimistä kannistaa Oliministä	Native
17					27 - 24	Committee of Commi	A PERSON LOND IN COLUMN TO SERVICE AND ADDRESS.	and and the state of the state	THE RESIDENCE OF THE PROPERTY	VERTICAL ON A VANDERSON DE PARAMETER PER ANTONIO.
18					The second second second	Company of the Compan	Comment of the fact that the second of the second	A SAN SAN MATTER TO THE PROPERTY OF THE SAN SAN SAN SAN SAN SAN SAN SAN SAN SAN	CHARLES MAKE ALCOHOLY LEWAY TO THE TOWN THE STREET STREET, THE STREET STREET, THE STREET,	ALTERNATURE BUILDING SENSENSEN AND SENSEN SE
19		NOTES AND A CONTRACTOR				THE RESIDENCE OF THE PARTY OF T	A STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF T		THE THE PROPERTY OF SOME THE PROPERTY OF THE P	AND THE PROPERTY OF THE PROPER
20					Partition of Assertation and Assertation	AND THE REAL PROPERTY.	A STREET, ALL STREET, A STREET, BANK OF STREET, BANK OF STREET, BANK OF STREET, BANK OF STREET, BANK OF STREET,	egangen, an manana marana at manan 1955 ann 1965 pin 1969 genargamenter armé accadition (1964 et el de tres de Gangeria	(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)(1986年)	STREET, STREET
21	CHEC MICK SPACES SE			and the second second second	AND AND RESIDENCE OF THE PARTY		COURTS COMMUNICATION OF THE PARTY.	ACTION IN CONTROL AND AND AND AND AND AND AND AND AND AND	ACTIVITIES OF THE CONTRACTOR OF THE PROPERTY OF THE CONTRACTOR OF	With the Committee and Committee of the
22	S-7	20 - 22	13	16	23 - 38	A STATE OF THE PARTY OF THE PAR	Brown, dar	np, very dense, silty SAND little gravel	ALTERNATION TO COMPANY OF A A COMPANY OF A PROPERTY OF A PROPERTY OF A PARTY.	Native
23	NAMES OF TAXABLE PARTY.			A A A A A A A A A A A A A A A A A A A	50+/1"	A. A. A. A. A. A. A. A. A. A. A. A. A. A	ACCOUNT MANAGEMENT AND ACCOUNT OF THE PERSON	AN DESCRIPTION OF THE PROPERTY	Saudeliniake auran estimator america communicativa (n. 1700 anno ferimate remainment, estimate (n. 1701 et el	North Comments of the Comment of the
24	o ettatori ver incamo					22'		Boring terminated at 22' in native sifty	SAND little gravel	≈ 576'
25				40.00	and a factor of the factor of the		70 M. L. A. AND ED PLANTED SPECIAL STORY	them are not considerable of the language property of the residence of the	CONTRACTOR OF THE PROPERTY OF	er ingral was supplied in the law beings,
Drilling (Soil Ex Co	1		<u>Coh</u>	esive (blows/f	t)	Conesionless (blows/ft)	Refer to geotechnical rep	ort dated 5/17/21
Rig Type	e:	Mobile B57			0 - 2	Very Soft		0 - 3 Very Loose	for additional information	
Driller:		Mr. Rich B	onetti		2 - 4	Soft		4-9 Loose	Ground elevation based of	on existing ground
Helper:		Mr. Josh G	oodale		5 - 8	Medium Stiff		10 - 29 Medium Dense	surface	and and a production
Inspecto		Mr. Joel M			9 - 15	Stiff		30 - 49 Dense	•	
Client R	ep.:	Mr. Joesep	h Durkin		16 - 30	Hard		50+/ft Very Dense	ŀ	

Boring #	B - 4
Sheet #	1 of 1
Location:	Addition south
Elevation:	≈ 597 '
Drill Date:	5/10/2021

Client:		Encompas	a Haalth					-	1000				
								Type	SPT			water Observat	
Project:		Fairlawn F					Drilling	Size	2" I.D.	Depth (ft)	Casing at	Stabilization P	eriod
Project Ad			Street, Wo	rcester, M.	Α	_	Туре	Hammer	140 lbs	No OW		11	
Project No	D.:	19103	-					Fall	30"	No GW	n/a	Upon bon	ng completion
Depth		Bori	ng Sampl	ing Data		Strata				- · · · · · · · · · · · · · · · · · · ·			
(ft)	No.	Depth (ft)		Rec. (in)	Blows/6"	Change		Sample De	escriptions &	Geotechnic	cal Observa	tions	Remarks
·zmanazmanananan	S-1	0 - 2	24	6	4 - 3		2" Gray, da	imp, sand and	d gravel				4" Asphalt
2 2	TANCHES INTERVENTAN	and bearing and the second of the second	e program i communicación de la composición dela composición dela composición dela composición dela composición de la co	THE PROPERTY OF THE PROPERTY O	5 - 8				, silty sand an		- William C. (2.200 P. Ann.) (1.200 P. (2.200		FIII
3	S-2	2 - 4	24	1.0	5 - 10	2'	Brown/gra	y, damp, med	llum dense, si	lty SAND little (gravel		Native
4	w//www.horestores	TO SECURE A SECURITION OF		STEER CONTRACTOR OF THE PROPERTY.	17 - 12				a william of the same	33-28-39-39-39-39-39-39-39-39-39-39-39-39-39-	Apply the manager of the party of	THE PARTY OF THE PROPERTY OF THE PROPERTY OF THE PARTY OF	. CONTRACTOR CONTRACTO
5	mit vernyesspan, myye se	V NGTHERRESKA WELLEYSEN FERSKALLINGE	CONTRACTOR DESIGNATION DO		manata mananan mananan m		Refusal x 2	; move 3' awa	ay from existir	ng building	No. of the St. Application of the St. St. St. St. St. St. St. St. St. St.	THE REAL PROPERTY AND ADDRESS OF THE PARTY O	Native
6	S-3	5 - 6'3"	15	8	19 - 30	24 1041/2003 124 (0.00000000000000000000000000000000000	Same as S-	2 but very de	nse	The second secon	WOLLAND TO SHAW THE PROPERTY OF THE PROPERTY O	A STATE OF THE PARTY OF THE PAR	Commence of the state of the st
7	THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT N		Comment of the Commen		50 +/3") and a second	THE STREET WITH STREET STREET	nor-suncessiphine and successive	n negatyrat nagyas zamena carbadechas	THE COMMENT OF THE PARTY OF THE	TOTAL CONTRACTOR OF THE PARTY O	NAME AND ADDRESS OF THE PARTY O
8	CA STANCE OF THE STANCE OF	CONTRACTOR CONTRACTOR	odinie komunica za	Lesson Laboratoria de la constanta de la const		6'3"		Boring termi	inated with au	ger refusal on :	suspected bot	ılder	≈ 591'
9	CONTRACTOR AND AND AND AND AND AND AND AND AND AND	SEPREMIENTAL TERRO	Name and the second second		AMERICAN IN AUGUSTON			at 6'3" after a	attempting 3 h	oles in native s	silty sand and	gravel	Agenda Louis Tr. Ministri Manis Maganina Communication
10	-81-48aca:#####	TOURSESSAIDS TO A SECOND	véda werzer nen	ATPANENT VILLANDA VALLE			STATE OF THE PARTY	4010000 OV. 2.0240 OV. 000	SCOUNTS STATE OF STAT	Technology (Mesons (Mesons)	and the second s	ANNERS AND THE SECRETARIES AND A SECRETARIES.	Peta Breadlighta in army parties dialet alte distility.
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Drilling (o.:	Soil Ex Co	rb	' 	Coh	esive (blows/	(†)	Cohe	sionless (blo	marc/ft\	- D-6	(1) :	
Rig Type		Mobile B57			0 - 2	Very Soft	. 61	0 - 3	Very Loos				oort dated 5/17/21
Driller:	- ·	Mr. Rich Be			2-4	Soft		4-9	Loose	6		onal information	
Helper:	l	Mr. Josh G			5-8	Medium Stiff		4 - 9 10 - 29				elevation based	on existing ground
Inspecto	, I	Mr. Joel M			9 - 15	Stiff			Medium D	ense	<u>surf</u> ace		
Client R		Mr. Joesep			9 - 15 16 - 30	Hard		30 - 49 50+/ft	Dense Van Dona		•		
Chonero	٠٧٠.	MIL DOCOCK	an Quiniii		10 - 30	rialu		50Ψ/I t	Very Dens	e		-	



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	100.0		
1/2"	98.9		
3/8"	96.5		
#4	87.8		
#10	79.3		
#20	68.8		
#40	56.8		
#50	50.3		
#60	46.8		
#100	37.5		
#200	26.1	1	

	<u>Material Descripti</u>	<u>on</u>
Brown SAND so	me silt little gravel	
PL= NP	Atterberg Limits LL= NV	B PI= NP
D ₈₅ = 3.6700 D ₃₀ = 0.0959 C _u =	$\begin{array}{c} \underline{\text{Coefficients}} \\ \text{D}_{60} = & 0.5060 \\ \text{D}_{15} = \\ \text{C}_{\text{C}} = & \end{array}$	D ₅₀ = 0.2957 D ₁₀ =
USCS= SM	Classification AASH	ΓO= A-2-4(0)
	Remarks ed by Joel Morin 5/10 report for additional	

(no specification provided)

Sample No.: S2 Location: B1 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 **Elev./Depth:** 2'-4'

YANKEE ENGINEERING & TESTING, INC.

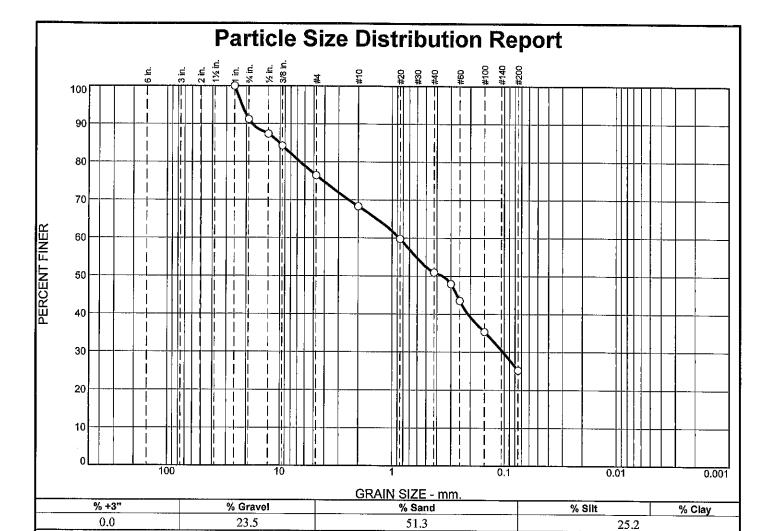
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	91.2		
1/2"	87.4		
3/8"	84.2		
#4	76.5		
#10	68.3		
#20	59.8		
#40	51.0		
#50	47.9		
#60	43.5		
#100	35,4		
#200	25.2		

Light brown SANI	D some silt some gra	201
	a come and some Bro	avei
	Atterberg Limits	S
PL= NP	LL= NV	PI= NP
	Coefficients	
D ₈₅ = 10.1300 D ₃₀ = 0.1024	$D_{60} = 0.8626$	$D_{50} = 0.3561$
D30= 0.1024 C ₁₁ =	D ₁₅ = C _c =	D ₁₀ =
ч	Classification	
USCS= SM		TO= A-2-4(0)
	Remarks	• • • • • • • • • • • • • • • • • • • •
Boring jar sampled	t by Joel Morin 5/10)/21
	eport for additional	

* (no specification provided)

Sample No.: S3 Location: B2 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 5'-7'

YANKEE ENGINEERING & TESTING, INC.

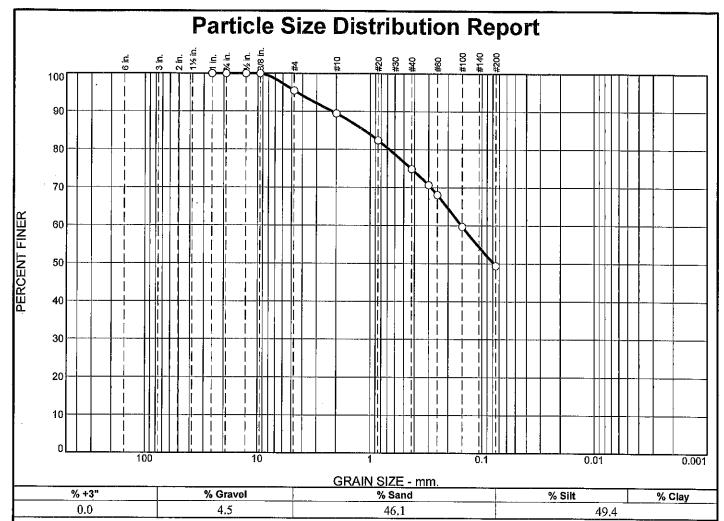
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	95.5		
#10	89.5		
#20	82.4		
#40	74.9		
#50	70.7		
#60	68.1		
#100	59.7		
#200	49.4	}	
	•	İ	
	l	<u> </u>	

	Material Description and SAND trace grave	
PL= NP	Atterberg Limits	PI= NP
D ₈₅ = 1.1254 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.1527 D ₁₅ = C _c =	D ₅₀ = 0.0782 D ₁₀ =
USCS= SM	<u>Classification</u> AASHT	O= A-4(0)
	Remarks d by Joel Morin 5/10/ report for additional in	

(no specification provided)

Sample No.: S6 Location: B2 Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 15'-17'

YANKEE ENGINEERING & TESTING, INC.

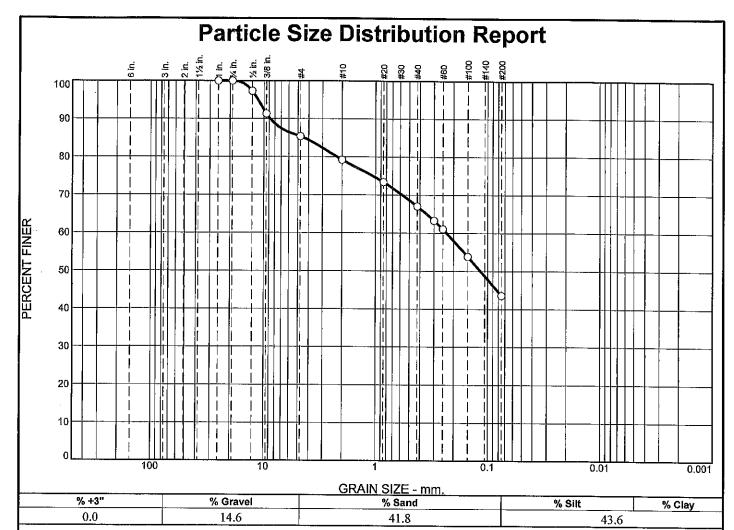
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1"	100.0		
3/4"	100.0		
1/2"	97.3		
3/8"	91.3	1	
#4	85.4		
#10	79.2		
#20	73.4	}	
#40	67.0		
#50	63.3		
#60	61.0		
#100	53.8		
#200	43.6	;	
L			

	Material Descripti	<u>ion</u>
Brown/red SANI	and SILT little grav	vel
	Atterberg Limits	5
PL= NP	LL= NV	PI= NP
	Coefficients	
D ₈₅ = 4.4144	D ₆₀ = 0.2313	D ₅₀ = 0.1156
C _u =	C _C =	D ₁₀ -
	Classification	
USCS= SM	AASH'	TO= A-4(0)
	<u>Remarks</u>	
	ed by Joel Morin 5/10	
See geotechnical	report for additional	information

* (no specification provided)

Sample No.: \$7 Location: B3

Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 20'-22'

YANKEE ENGINEERING & TESTING, INC.

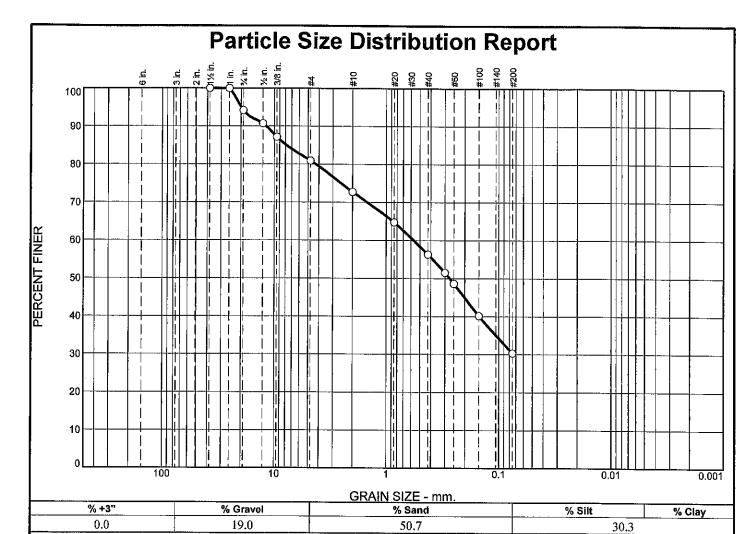
Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK Checked By: SMM



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
1-1/2"	100.0		
1"	100.0		
3/4"	94.2		
1/2"	90.7		
3/8"	87.2		
#4	81.0		
#10	72.7		
#20	64.7		
#40	56.3		
#50	51.5		
#60	48.6		
#100	40.2		
#200	30.3		
L*	<u> </u>		

D (11)	Material Description	<u>on</u>
Brown SAND so	me silt little gravel	
PL= NP	Atterberg Limits LL= NV	PI= NP
D ₈₅ = 7.8419 D ₃₀ = C _u =	Coefficients D60= 0.5667 D15= C _c =	D ₅₀ = 0.2721 D ₁₀ =
USCS= SM	<u>Classification</u> AASHT	O= A-2-4(0)
	Remarks ed by Joel Morin 5/10, report for additional i	

* (no specification provided)

Sample No.: S2 Location: B4

Source of Sample:

Geotechnical Borings 5/10/21

Date: 5/12/21 Elev./Depth: 2'-4'

YANKEE ENGINEERING & TESTING, INC.

Client: Encompass Health

Project: Fairlawn Rehabilitation Hospital

189 May Street, Worcester, MA

Project No: 19103

Tested By: AK

CONSTRUCTION PERIOD (SHORT TERM) STORMWATER OPERATION & MAINTENANCE PROGRAM September 14, 2021

Fairlawn Rehabilitation Hospital Addition and Renovations 189 May Street Worcester, Massachusetts

Currently Owned by: New England Rehabilitation Hospital of Central Massachusetts, Inc.

During construction, the contractor is responsible for the following inspection and maintenance. Inspections and resulting maintenance tasks shall be recorded in an <u>Inspection Log</u> that is kept on site and available for inspection by municipal officials.

Contact I	nformation:	
Name: Address: Contact: Phone:	To be determined	

- 1. Sediment control barriers shall be inspected on a weekly basis. The inspector shall inspect for barriers overturned, barriers which have lost contact with the ground allowing runoff to pass underneath them and biodegradation of straw wattles.
- 2. If collected silt against the sediment control barriers has reached to half the height of the silt fence then it shall be removed. If a sediment control barrier must be replaced, the inspector shall inform the City, contractor, and owner immediately to have this replacement made as soon as possible.
- 3. The site entrance mat shall be inspected on a weekly basis and refreshed as necessary.
- 4. The drainage inlets and outlets shall be inspected on a weekly basis and immediately after storm events of ½ inch or more to confirm that they are functioning properly. If any defects are observed or if the inspector shall inform the Engineer, contractor, and owner immediately.
- 5. The proposed lawn and landscape areas created will be inspected for the presence of rills or other areas of erosion. If areas to be vegetated become bare through either erosion or the failure of vegetation to take, the inspector shall inform the contractor and owner and additional hydroseeding or planting shall be performed, as necessary, to achieve full stabilization through vegetation.
- 6. If fertilizer is used it must be low in phosphorus and utilize slow-release phosphorus.
- 7. Pet wastes, food waste, and construction debris must be collected and disposed of, not allowed to biodegrade or enter stormwater runoff.

POST CONSTRUCTION (LONG TERM) STORMWATER OPERATION & MAINTENANCE PROGRAM September 14, 2021

Fairlawn Rehabilitation Hospital 189 May Street Worcester, Massachusetts

Post-Construction Owner and Applicant

Owner Information:	
Name: Fairlawn Hospital Address: 189 May Street, Worcester, MA Contact: Josiah Moyer, Facilities Director Phone: 508-791-6351	

Upon completion of the project, the yard and landscaping will continue to be maintained by the future lot owner. Once the construction site has been fully stabilized, the owner should establish a schedule and keep a log of inspection and maintenance activities for the measures described below:

<u>Landscape Maintenance:</u>

Vegetated areas in the landscape will reduce erosion, encourage infiltration of rainwater, and keep stormwater clean. It is important to maintain the vegetated areas of the site.

- 1. Proper mowing is one of the most important ways to maintain a healthy lawn. Mow only when the grass is dry to get a clean cut and minimize the spread of disease. Mow grass to a height of
- 3". Mow frequently, cutting no more than 1/3 of the height of the grass at a time. Sharpen your mower blades after every 10 hours of mowing.
- 2. Grass clippings contain high amounts of nitrogen, a key ingredient in fertilizer. Make all attempts to use your grass clippings by leaving them on your lawn. If the grass clippings are not used, do not dispose of them near any wetlands and or water bodies and designate a place to compost them in an upland area.
- 3. If your lawn areas and plant material demand fertilizer, then use low phosphorus organic or slow-release fertilizers. Fertilize in the fall, but in coordination with weather patterns.
- 4. The best defense against pests within the grass is to use an Integrated Pest Management system which consists of beneficial insects (lady bugs, spiders, certain nematodes, and bacteria.)
- 5. Minimize watering the lawn areas. If needed water in the early morning and water deeply and infrequently.
- 6. Collect and dispose of pet wastes rather than allowing them to be washed off with stormwater runoff.

Impervious Surface Maintenance:

Particles that collect on paved surfaces can contain materials that can inhibit water quality. Sweeping sand and debris from the parking lot is a good housekeeping measure that will remove gross pollutants and should be undertaken a minimum of twice per year. DEP recommends frequent sweeping of parking lots in high traffic areas as an integral part of stormwater management.

1. The parking lots shall be swept at least twice a year. Some property owners sweep their sites more frequently to maintain a neat appearance for customers.

- 2. Accumulated leaves and grass clippings shall also be removed from the impervious surfaces at a minimum of twice per year.
- 3. In the winter months, CaCl₂ (calcium chloride salt) application shall be limited to the amount necessary to prevent sand from freezing. Sand shall be used sparingly but in sufficient quantity to maintain the parking and loading surface in a safe condition.

Catch Basin and Drainage System Maintenance:

The deep sump catch basins remove floatable trash, petroleum products, and sediments from the stormwater in order to prevent them from reaching the waters of the Commonwealth. They must be inspected and cleaned periodically to be sure they are operating properly.

- 1. Catch basins shall be inspected at a minimum of two times a year (i.e. spring and fall).
- 2. The visual inspection should ascertain that the traps and deflectors are in place and that there are no blockages or obstructions to the inlet and or trap.
- 3. If during the inspection, it is noticed that any of the internal components are damaged or missing, they should be repaired immediately.
- 4. The inspection should also identify evidence of vector infestation (mosquito larvae, for example) and accumulation of hydrocarbons, trash, and sediment in the system.
- 5. A clamshell truck may be used to clean out catch basins after confirming that there is no oil or fuel floatables present. Disposal of the material from the stormwater BMP sumps shall be in accordance with the local municipality's requirements.
- 6. Clean the catch basin and hydrodynamic separator during dry weather conditions when no flow is entering the system. Remove debris, sand, and accumulated trash from the unit's interior and remove the fines from the screen.
- 7. Subsurface structures are confined spaces and only properly trained personnel possessing the proper training and possessing the necessary safety equipment should enter the unit. Confined spaces can contain odorless, colorless poison gas. Take confined entry precautions seriously.

Detention Basin and Open Drainage Swale Maintenance:

Drainage swales and detention basins convey and hold surface stormwater, and their capacity must be maintained regularly to assure proper function to prevent excess runoff and damage to downstream properties.

- 1. Swales and detention basins should be inspected at a minimum of two times a year (i.e. spring and fall).
- 2. The visual inspection should ascertain that the slopes are stable, that no erosion and sedimentation is occurring, and the slopes, dikes, and spillways are structurally intact, are that there are no blockages or obstructions to the flow of stormwater.
- 3. Swales and detention basins shalf be mowed at least once per year, and any trees or invasive vegetation should be removed from them on a regular basis. Tree roots can cause structural instability in dikes that are designed to hold water.

Stormwater Construction Site Inspection Report

	General Info	ormation	
Project Name	Fairlawn Hospital Addition	on and Renovation	
NPDES Tracking No.	S Tracking No. Not Applicable Location 189 May Street. Worcester, M.		
Date of Inspection	,	Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information	100		
Inspector's Qualifications			
Describe present phase of construction		**	
Type of Inspection: ☐ Regular ☐ Pre-storm event	☐ During storm event	☐ Post-storm e	vent
	Weather Info	ormation	
Has there been a storm event since	the last inspection?	s 🗖 No	
If yes, provide: Storm Start Date & Time:	torm Duration (hrs):	Approximate	Amount of Precipitation (in):
Weather at time of this inspection?		·- ·	
☐ Clear ☐ Cloudy ☐ Rain ☐ Other:	☐ Sleet ☐ Fog ☐ Sno Temperature:	wing 🚨 High Win	ds
Have any discharges occurred sinc If yes, describe:	e the last inspection?	es 🗆 No	
Are there any discharges at the tim If yes, describe:	e of inspection? □Yes □	No	

Site-specific BMPs

- Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.
- Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.

	BMP	BMP	BMP	Corrective Action Needed and Notes
1.0		Installed?	Maintenance	
			Required?	
1	Erosion control barriers	□Yes □No	□Yes □No	
2	Temp. settling basin, if	□Yes □No	□Yes □No	
	any			
3	Catch Basin Inlets, if	□Yes □No	□Yes □No	
	any			
4	Site Entrance Mat, if any	□Yes □No	□Yes □No	
5	Floc Blocks & Jute	□Yes □No	□Yes □No	
	Mesh, if used		•	
6	Stockpile Protection, if	□Yes □No	□Yes □No	
	any			
7	Site Catch Basins and	□Yes □No	□Yes □No	
	Manholes, if any			
8	Downstream Discharge	□Yes □No	□Yes □No	

	BMP	ВМР	BMP	Corrective Action Needed and Notes
411		Installed?	Maintenance Required?	
	Point			
9	Slope Stabilization Measures	☐Yes ☐No	□Yes □No	
10		□Yes □No	□Yes □No	777-91-101-1
11		□Yes □No	□Yes □No	
12		□Yes □No	□Yes □No	
13		☐Yes ☐No	□Yes □No	
14		□Yes □No	□Yes □No	
15		□Yes □No	□Yes □No	
16		□Yes □No	□Yes □No	
17		□Yes □No	□Yes □No	
18		□Yes □No	□Yes □No	
19		□Yes □No	☐Yes ☐No	1994
20	- 11 - 12 1	□Yes □No	□Yes □No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	□Yes □No	Yes No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	□Yes □No	□Yes □No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	□Yes □No	□Yes □No	
4	Are discharge points and receiving waters free of any sediment deposits?	□Yes □No	□Yes □No	
5	Are storm drain inlets properly protected?	□Yes □No	□Yes □No	
6	Is the construction exit preventing sediment from being tracked into the driveway/ street?	□Yes □No	□Yes □No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	□Yes □No	Yes □No	

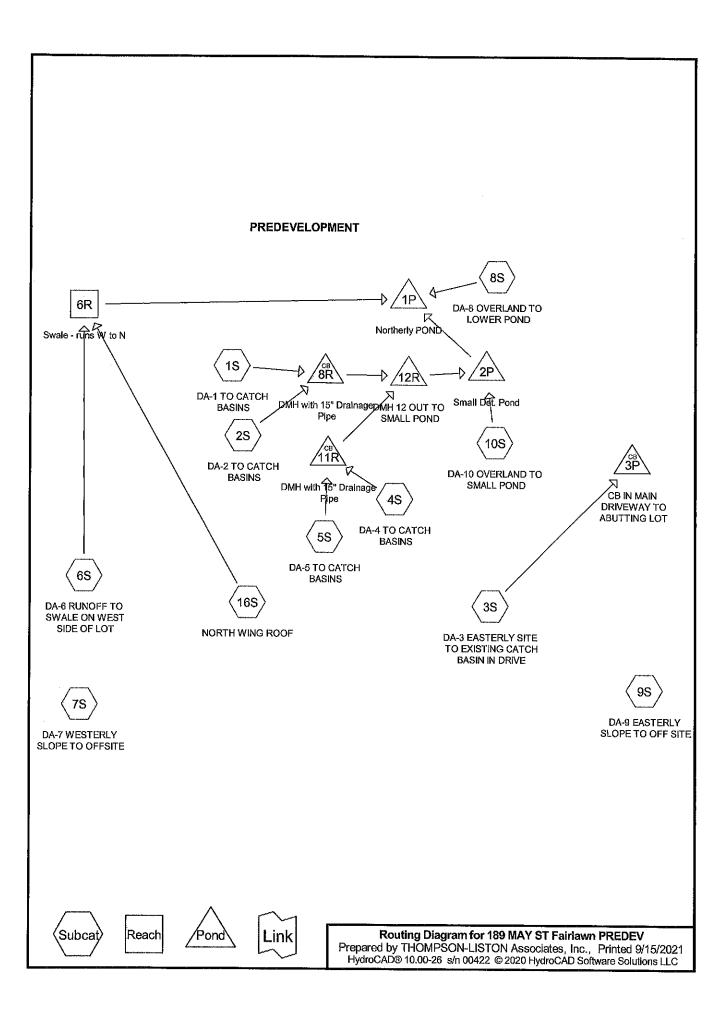
	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes						
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained? To prevent the discharge to the ground and watershed?	□Yes □No	□Yes □No							
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	□Yes □No	□Yes □No							
10	Are materials that are potential stormwater contaminants stored inside or under cover?	□Yes □No	□Yes □No							
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	□Yes □No	□Yes □No							
12	(Other)	□Yes □No	□Yes □No							
			Non-Compli	ance						
Describe any incidents of non-compliance not described above:										
CERTIFICATION STATEMENT										
	"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." Print name and title:									
	Signature:			Date:						
				······································						

ANNUAL RECORD OF MAINTENANCE

OWNER: _F	airlawn R	ehabili	itation	Hospi	tai								
ADDRESS: 189 May Street, Worcester, MA													
INSPECTOR:		PHONE:											
DEVICES/ ARE	AS OPERA	TION	AND N	MAINTE	NANCI	E:							
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
LANDSCAPING MAINTENANCE PERFORMED													
31114.7		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
IMPERVIOUS S MAINTENANCE PERFORMED	URFACE												
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
CATCH BASINS MAINTENANCE PERFORMED													
···													
								76					
											·		
ADDITIONAL N	OTES:				••						_	· · · · · · · · · · · · · · · · · · ·	
SIGNATURE:						DATE			-				

ANNUAL RECORD OF INSPECTIONS

OWNER: _	Fairlawn I	Rehabi	<u>ili</u> tatio	n Hosp	ital								
ADDRESS:	189 M	lay Str	eet St	reet, W	orcest	er MA					-	,	
INSPECTOR:						PHO	NE:						
DEVICES/ AR	EAS INSPE	CTED:											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
LANDSCAPIN	G												
OBS	ERVATIONS											*	
	74	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
IMPERVIOUS	SURFACE				 .								
OBS	ERVATIONS											<u> </u>	**
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
CATCH BASIN	IS												
OBS	ERVATIONS										3		
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
DRAINAGE SV	WALE	, 											,
OBS	ERVATIONS							•	^*************************************		·		
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
DETENTION B	ASIN												
OBS	ERVATIONS						, , , , , , , , ,		•		-		
ADDITIONAL	NOTES:												
SIGNATURE:				1227	-	DATE				18	-	<u> </u>	



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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

=

0.42 cfs @ 12.13 hrs, Volume=

0.033 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN I	Description				
*		7,195	98 i	mpervious				
		7,195	,	100.00% Im	pervious A	rea		
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	·	
_	10.0	,		(32,000)	(6.5)	Direct Entry.		

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.55 cfs @ 12.13 hrs, Volume=

0.044 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN	Description			
1		9,015	98	impervious			
-	•	932	74	hsgC grass	, open		
		9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	ious Ārea	ea	
_	Tc (min)	Length (feet)	Slop (ft/f	_	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Depth> 2.11"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656	93	Weighted Average
	11,169		20.44% Pervious Area
	43,487		79.56% Impervious Area

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Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
10.0					Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff

0.45 cfs @ 12.14 hrs, Volume=

0.036 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area	a (sf)	CN	Description			
*	E	5,894	98	impervious			
*		5,182	74	hsgC grass	, open		
	11	,076	87	Weighted A	verage		
	5	5,182		46.79% Pei	vious Area		
	5	5,894		53.21% lm	ervious Ar	ea	
(1	Tc L min)	ength.	Slope (ft/ft)		Capacity (cfs)	Description	
	10.0		,	<u>, , , , , , , , , , , , , , , , , , , </u>		Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

1.73 cfs @ 12.13 hrs, Volume=

0.137 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description			
•	*	28,942	98	impervious			
	k	1,482	74	hsgC grass	, open		
		30,424 1,482 28,942	97	Weighted A 4.87% Perv 95.13% Imp	rious Ārea	rea	
_	Tc (min)	Length (feet)	Slope (ft/ft	•	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff

4.68 cfs @ 12.15 hrs, Volume=

0.375 af, Depth> 1.50"

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_	Area (sf)	CN	Description			
*	44,913	98	impervious			
*	72,726	72	hsgC woode	ed, trees		
*	12,925	98	roof			
	130,564	84	Weighted A	verage		
	72,726		55.70% Per	vious Area		
	57,838		44.30% lmp	ervious Are	ea e	
, marie	Tc Length (min) (feet)	Slop (ft/	,	Capacity (cfs)	Description	
	10.0				Direct Entry,	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff =

0.82 cfs @ 12.15 hrs, Volume=

0.065 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description			
*		9,091	98	impervious			 _
*		13,655	74	hsgC grass	, open		
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	vious Area	ea	_
•	Tc (min)	Length (feet)	Slope (ft/ft	~	Capacity (cfs)	Description	
	10.0					Direct Entry,	 _

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.10 cfs @ 12.13 hrs, Volume=

0.008 af, Depth> 2.39"

	A	rea (sf)	CN I	Description	<u>. </u>	
*		1,702	98 i	mpervious		
		1,702		100.00% In	pervious A	Area
	Тс		Slope	-		Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	10.0					Direct Entry.

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

0.65 cfs @ 12.17 hrs, Volume=

0.056 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description			
*		1,737	98	impervious			
*		13,161	74	hsgC grass	, open		
*		17,161	72	hsgC wood	ed, trees		
		32,059	74	Weighted A	verage		
		30,322		94.58% Pei	vious Area		
		1,737		5.42% Impe	ervious Area	a	
	Тс	Length	Slop	e Velocity	Capacity	Description	
(1	min)	(feet)	(ft/fi	•	(cfs)	Description	
		(ICGL)	(101)	1) (10366)	(015)	Discort Fortune	
	10.0					Direct Entry,	

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.08 cfs @ 12.17 hrs, Volume=

0.007 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area (s	sf)	CN [Description			
*	3,89	52	74 h	sgC grass	, open		
•	3,8	52	1	00.00% Pe	ervious Are	ea	
- <u>(mi</u>	Гс Len n) (fe	gth eet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10	.0					Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

0.75 cfs @ 12.13 hrs, Volume=

0.059 af, Depth> 2.39"

	Area (sf)	CN	Description			
*	12,979	98	roof			
	12,979		100.00% In	npervious A	Area	
- mi)	c Lengtl			Capacity (cfs)	Description	
10		/ (10	11) (10300)	(013)	Direct Entry.	

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 1.58" for 2-yr event

Inflow

5.42 cfs @ 12.14 hrs. Volume=

0.434 af

Outflow

5.32 cfs @ 12.19 hrs, Volume=

0.433 af, Atten= 2%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 3.38 fps, Min. Travel Time= 2.5 min

Avg. Velocity = 1.29 fps, Avg. Travel Time= 6.4 min

Peak Storage= 787 cf @ 12,19 hrs

Average Depth at Peak Storage = 0.31'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75'

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area =

4.769 ac, 59.48% Impervious, Inflow Depth > 1.75" for 2-yr event

Inflow

8.56 cfs @ 12.19 hrs, Volume=

0.697 af

Outflow

8.83 cfs @ 12.20 hrs, Volume=

0.604 af, Atten= 0%, Lag= 0.9 min

Discarded =

0.06 cfs @ 12.20 hrs, Volume=

0.042 af

Primary

8.77 cfs @ 12.20 hrs, Volume=

0.562 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 562.98' @ 12.20 hrs Surf.Area= 2,561 sf Storage= 4,476 cf

Plug-Flow detention time= 58.7 min calculated for 0.604 af (87% of inflow)

Center-of-Mass det. time= 19.1 min (812.2 - 793.1)

volume	invert Ava	all.Storage_	Storage Descr	iption
#1	559.44'	7,541 cf	Northerly Pon	d from Swale (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	****		ım.Store bic-feet)

(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
559.44	0	0	0
560.00	431	121	121
562.00	1,819	2,250	2,371
562.79	2,337	1,642	4,012
563.00	2,585	517	4,529
564.00	3,438	3,012	7,541

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Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
	•		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=562.98' (Free Discharge) **1.2.20 hrs** HW=562.98' (Free Discharge)

Primary OutFlow Max=8.72 cfs @ 12.20 hrs HW=562.98' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 8.72 cfs @ 1.10 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area =	1.435 ac, 81.68% Impervious, Inflow	Depth > 2.14" for 2-yr event
Inflow =	3.15 cfs @ 12.17 hrs, Volume=	0.256 af
Outflow =	3.15 cfs @ 12.18 hrs, Volume=	0.256 af, Atten= 0%, Lag= 0.5 min
Primary <i>≔</i>	3.15 cfs @ 12.18 hrs, Volume=	0.256 af
Secondary =	0.00 cfs @ 10.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 577.40' @ 12.18 hrs Surf.Area= 77 sf Storage= 49 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.2 min (782.0 - 781.9)

#2

Secondary

Volume	Inv	ert Avail.S	torage	Storage D	Description		
#1	576.	21'	457 cf	Small Det	ention Pond (Prismatic) Listed below (Recalc)	
Elevatio		Surf.Area		:.Store	Cum.Store		
(fee	t)	(sq-ft)	(cubi	c-feet)	(cubic-feet)		
576.2	1	0		0	0		
577.0	0	56		22	22		
578.0	0	108		82	104		
579.0	0	162	162		239		
580.0	0	273		218	457		
Device	Routing	Inver	t Outl	et Devices			
#1	Primary	576.21	12.0	" Round C	ulvert to Larg	e Pond	
	L= 49.0' CPP, square edge headwall, Ke= 0.500						
						575.71' S= 0.0102'/' Cc= 0.900	
					Area= 0.79 sf		

Cv= 2.48 (C= 3.10)

579.00' 120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir

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Primary OutFlow Max=3.06 cfs @ 12.18 hrs HW=577.36' TW=562.97' (Dynamic Tailwater) 1=Culvert to Large Pond (Inlet Controls 3.06 cfs @ 3.89 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.38' TW=559.69' (Dynamic Tailwater) 2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.255 ac, 79.56% Impervious, Inflow Depth > 2.11" for 2-yr event

Inflow =

2.80 cfs @ 12.14 hrs. Volume=

Outflow =

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Atten= 0%, Lag= 0.0 min

Primary

2.80 cfs @ 12.14 hrs, Volume=

0.220 af

0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 578.04' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing #1 Primary Invert Outlet Devices

577.00'

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.65 cfs @ 12.14 hrs HW=577.99' (Free Discharge)
—1=Culvert (Inlet Controls 2.65 cfs @ 3.38 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 2.34" for 2-vr event

Inflow =

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Outflow =

0.97 cfs @ 12.13 hrs, Volume=

0.077 af, Atten= 0%, Lag= 0.0 min

Primary =

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.88' @ 12.17 hrs

Flood Elev= 585.40'

Device Routing

Invert Outlet Devices

#1 Primary

580.38' **15.0" I**

15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.80 cfs @ 12.13 hrs HW=580.86' TW=580.32' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.80 cfs @ 2.72 fps)

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Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

0.953 ac. 83.94% Impervious, Inflow Depth > 2.18" for 2-yr event

Inflow

2.18 cfs @ 12.14 hrs, Volume=

0.173 af

Outflow =

2.18 cfs @ 12.14 hrs, Volume=

0.173 af, Atten= 0%, Lag= 0.0 min

Primary

2.18 cfs @ 12.14 hrs, Volume=

0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.92' @ 12.14 hrs

Flood Elev= 586.35'

Device Routing

Invert Outlet Devices

#1 Primary 581.06'

15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500

Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.06 cfs @ 12.14 hrs HW=581.89' TW=580.32' (Dynamic Tailwater) 1=Culvert (Barrel Controls 2.06 cfs @ 3.36 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

1.346 ac, 87.05% Impervious, Inflow Depth > 2.22" for 2-yr event

Inflow

3.15 cfs @ 12.13 hrs, Volume=

0.249 af

Outflow = 3.08 cfs @ 12.17 hrs, Volume=

0.249 af, Atten= 2%, Lag= 2.2 min

Primary

3.08 cfs @ 12.17 hrs, Volume=

0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.36' @ 12.17 hrs Surf.Area= 321 sf Storage= 175 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.0 min calculated for 0.249 af (100% of inflow)

Center-of-Mass det. time= 0.7 min (780.8 - 780.2)

Volume Invert Avail.Storage Storage Description	
#1 579.36' 87 cf 4.00'D x 6.95'H Vertical Cone/Cylinder	
#2 579.36' 217 cf 15.0" Round Pipe Storage	
L= 177.0' S= 0.0038 '/'	
#3 579.36' 117 cf 15.0" Round Pipe Storage	
L= 95.0' S= 0.0107 '/'	
#4 580.39' 78 cf 4.00'D x 6.23'H Vertical Cone/Cylinder	

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.95 cfs @ 12.17 hrs HW=580.34' TW=577.35' (Dynamic Tailwater) 1=Culvert (Barrel Controls 2.95 cfs @ 3.95 fps)

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 10

Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.65 cfs @ 12.13 hrs, Volume=

0.052 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	<u>CN</u> [Description			
*		7,195	98 ii	mpervious			
		7,195	1	00.00% In	pervious A	Area	
	Тс	Length		-	Capacity	Description	
	<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)	<u> </u>	
	10.0					Direct Entry,	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.88 cfs @ 12.13 hrs, Volume=

0.070 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

A	rea (sf)	CN	Description					
*	9,015	98	impervious					
*	932	74	hsgC grass	nsgC grass, open				
	9,947 932 9,015		9.37% Perv	Weighted Average 9.37% Pervious Area 90.63% Impervious Area				
Tc (min)	Length (feet)	Slop (ft/ft	•	Capacity (cfs)	Description		_	
10.0					Direct Entry.			

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

4.65 cfs @ 12.13 hrs, Volume=

0.366 af. Depth> 3.50"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656	93	Weighted Average
	11,169		20.44% Pervious Area
	43,487		79.56% Impervious Area

Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021

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Tc	Length	Slope	Velocity	Capacity	Description
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)	·
10.0				•	Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff

0.83 cfs @ 12.14 hrs, Volume=

0.065 af, Depth> 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)_	CN	Description	<u> </u>				
*		5,894	98	impervious	mpervious				
*		5,182	74	hsgC grass	, open				
		11,076	87	Weighted A	Veighted Average				
		5,182		46.79% Pervious Area					
		5,894		53.21% lmp	pervious Ar	ea			
	Tc (min)	Length (feet)	Slop (ft/fi	•	Capacity (cfs)	Description			
	10.0	·				Direct Entry,			

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

2.73 cfs @ 12.13 hrs, Volume=

0.216 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfail=4.87"

	A	rea (sf)	CN	<u>Description</u>	Description				
•	*	28,942	98	impervious	mpervious				
1	*	1,482	74	hsgC grass	nsgC grass, open				
		30,424 1,482 28,942	97	Weighted A 4.87% Perv 95.13% Imp	ious Ārea	эа			
-	Tc (min)	Length (feet)	Slop (ft/ft	-7	Capacity (cfs)	Description			
	10.0					Direct Entry,			

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff

9.02 cfs @ 12.14 hrs, Volume=

0.713 af, Depth> 2.85"

Type III 24-hr 10-yr Rainfall=4.87"

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	Area (sf)	CN	Description				
*	44,913	98	impervious				
*	72,726	72	hsgC wooded, trees				
*	12,925	98	roof				
	130,564	84	Weighted Average				
	72,726		55.70% Pervious Area				
	57,838		44.30% Impervious Area				
	Tc Length in) (feet)	Slop (ft/) =				

Direct Entry,

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff

10.0

1.57 cfs @ 12.14 hrs, Volume=

0.124 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Α	rea (sf)	CN	Description				
*		9,091	98	impervious	impervious			
*		13,655	74	hsgC grass	nsgC grass, open			
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	vious Area			
	Tc (min)	Length (feet)	Slop (ft/fi		Capacity (cfs)	Description		
	10.0			· ·		Direct Entry,		

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.15 cfs @ 12.13 hrs, Volume=

0.012 af, Depth> 3.75"

	Aı	rea (sf)	CN	Description				
*		1,702	98	98 impervious				
		1,702	,	100.00% In	pervious A	rea		
<u>(n</u>	Tc nin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
1	0.0					Direct Entry,		

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 13

Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

1.58 cfs @ 12.15 hrs, Volume=

0.128 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Ar	ea (sf)	CN	Description	Description				
*		1,737	98	impervious					
*		13,161	74	hsgC grass	, open				
*		17,161	72	hsgC wood	ed, trees				
		32,059 30,322 1,737	74	Weighted Average 94.58% Pervious Area 5.42% Impervious Area					
<u>(n</u>	Tc nin)	Length Slope Velocity Capacity Description (feet) (ft/ft) (ft/sec) (cfs)							
1	10.0					Direct Entry,			

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.19 cfs @ 12.15 hrs, Volume=

0.015 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Area (sf)	CN [Description			
*	3,852	74 h	nsgC grass	, open		
	3,852 100.00% Pervious Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10.0					Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.17 cfs @ 12.13 hrs, Volume=

0.093 af, Depth> 3.75"

_	A	rea (sf)	CN	Description		
*		12,979	98	roof		
	•	12,979		100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description
_	10.0	(1001)	<u> </u>	(18300)	(03)	Direct Entry

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 2.94" for 10-yr event

Inflow

10.19 cfs @ 12.14 hrs, Volume=

0.806 af

Outflow

9.99 cfs @ 12.18 hrs, Volume=

0.804 af, Atten= 2%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.11 fps, Min. Travel Time= 2.0 min

Avg. Velocity = 1.62 fps, Avg. Travel Time= 5.2 min

Peak Storage= 1,213 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.45'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75'

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area =

4.769 ac, 59.48% Impervious, Inflow Depth > 3.11" for 10-yr event

Inflow

1.234 af

Outflow

15.21 cfs @ 12.19 hrs, Volume=

Discarded =

15.27 cfs @ 12.20 hrs, Volume=

1.142 af, Atten= 0%, Lag= 0.6 min

0.06 cfs @ 12.20 hrs, Volume=

0.044 af

Primary

15.21 cfs @ 12.20 hrs, Volume=

1.098 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.07' @ 12.20 hrs Surf.Area= 2,641 sf Storage= 4,699 cf

Plug-Flow detention time= 38.1 min calculated for 1.141 af (92% of inflow)

Center-of-Mass det. time= 12.4 min (799.8 - 787.5)

Volume	Invert <i>F</i>	Avail.Storage	_Storage De	escription
#1	559.44'	7,541 cf	Northerly I	Pond from Swale (Prismatic) Listed below (Recalc)
Elevation	Surf.Are	ea Inc	.Store	Cum.Store

(cubic-feet)	(cubic-feet)	(sq-ft)	(feet)
0	0	0	559.44
121	121	431	560.00
2,371	2,250	1,819	562.00
4,012	1,642	2,337	562.79
4,529	517	2,585	563.00
7,541	3,012	3,438	564.00

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 15

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.06' (Free Discharge) **12.20 hrs** HW=563.06' (Free Discharge)

Primary OutFlow Max=15.06 cfs @ 12.20 hrs HW=563.06' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 15.06 cfs @ 1.33 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.435 ac, 81.68% Impervious, Inflow Depth > 3.50" for 10-yr event Inflow = 5.16 cfs @ 12.17 hrs, Volume= 0.418 af Outflow = 5.07 cfs @ 12.19 hrs, Volume= 0.418 af, Atten= 2%, Lag= 1.1 min Primary = 5.07 cfs @ 12.19 hrs, Volume= 0.418 af Secondary = 0.00 cfs @ 10.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 578.53' @ 12.19 hrs Surf.Area= 137 sf Storage= 169 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.2 min (780.0 - 779.8)

579.00'

#2

Secondary

Volume	Inv	ert Avail.Sto	rage Storage	e Description
#1	576.	21' 4	57 cf Small D	Detention Pond (Prismatic) Listed below (Recalc)
Elevatio		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
576.2		0	0	0
577.0	00	56	22	22
578.0	00	108	82	104
579.0	00	162	135	239
580.0	00	273	218	457
Device	Routing	Invert	Outlet Device	ces_
#1	Primary	576.21'	12.0" Round	d Culvert to Large Pond
			L= 49.0' CF	PP, square edge headwall. Ke= 0.500
				Invert= 576.21' / 575.71' S= 0.0102'/' Cc= 0.900
			n= 0.012, Fl	low Area= 0.79 sf

Cv= 2.48 (C= 3.10)

120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 16

Primary OutFlow Max=4.99 cfs @ 12.19 hrs HW=578.47' TW=563.06' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 4.99 cfs @ 6.36 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.43' TW=559.80' (Dynamic Tailwater) 2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.255 ac, 79.56% Impervious, Inflow Depth > 3.50" for 10-yr event

Inflow = 4.65 cfs @ 12.13 hrs, Volume=

0.366 af

Outflow = 4.65 cfs @ 12.13 hrs, Volume=

0.366 af, Atten= 0%, Lag= 0.0 min

Primary

4.65 cfs @ 12.13 hrs, Volume=

0.366 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs. dt= 0.10 hrs.

Peak Elev= 578.98' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing Invert Outlet Devices #1 Primary 577.00'

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012. Flow Area= 0.79 sf

Primary OutFlow Max=4.40 cfs @ 12.13 hrs HW=578.86' (Free Discharge) 1=Culvert (Inlet Controls 4.40 cfs @ 5.61 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 3.70" for 10-yr event

Inflow

1.53 cfs @ 12.13 hrs, Volume=

0.121 af

Outflow = 1.53 cfs @ 12.13 hrs, Volume=

0.121 af, Atten= 0%, Lag= 0.0 min

Primary

1.53 cfs @ 12.13 hrs, Volume=

0.121 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.10' @ 12.21 hrs

Flood Elev= 585.40'

Device Routing **Outlet Devices** Invert #1 Primary 580.38'

15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.09 cfs @ 12.13 hrs HW=581.04' TW=580.71' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 1.09 cfs @ 2.39 fps)

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 17

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

0.953 ac, 83.94% Impervious, Inflow Depth > 3.55" for 10-yr event

Inflow =

3.55 cfs @ 12.13 hrs, Volume= 0.282 af

Outflow =

3.55 cfs @ 12.13 hrs, Volume=

0.282 af, Atten= 0%, Lag= 0.0 min

Primary =

3.55 cfs @ 12.13 hrs, Volume=

0.282 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.24' @ 12.13 hrs

Primary

Flood Elev= 586.35'

Device Routing

#1

Invert Outlet Devices

581.06'

15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500

Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.37 cfs @ 12.13 hrs HW=582.20' TW=580.71' (Dynamic Tailwater) 1=Culvert (Barrel Controls 3.37 cfs @ 3.77 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

1.346 ac, 87.05% Impervious, Inflow Depth > 3.59" for 10-yr event

Inflow =

5.09 cfs @ 12.13 hrs, Volume=

0.403 af

Outflow =

4.97 cfs @ 12.17 hrs, Volume=

0.403 af, Atten= 2%, Lag= 2.2 min

Primary =

4.97 cfs @ 12.17 hrs, Volume=

0.403 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 580.79' @ 12.17 hrs Surf.Area= 224 sf Storage= 303 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.1 min calculated for 0.399 af (99% of inflow)

Center-of-Mass det. time= 0.7 min (778.9 - 778.2)

<u>Volume</u>	Invert	Avail.Storage	Storage Description	
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder	
#2	579.36'		15.0" Round Pipe Storage	
			L= 177.0' S= 0.0038 '/'	
#3	579.36'	117 cf	15.0" Round Pipe Storage	
			L= 95.0' S= 0.0107 '/'	
<u>#4</u>	580.39	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder	
		400 6		

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900 n= 0.012. Flow Area= 1.23 sf

Primary OutFlow Max=4.78 cfs @ 12.17 hrs HW=580.74' TW=578.38' (Dynamic Tailwater)
—1=Culvert (Barrel Controls 4.78 cfs @ 4.38 fps)

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 18

Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.80 cfs @ 12.13 hrs, Volume=

0.063 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

-	A	rea (sf)	CN I	Description		
*		7,195	98 i	mpervious		
		7,195	,	100.00% In	npervious A	Area
(ı	Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	
	10.0					Direct Entry,

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.09 cfs @ 12.13 hrs, Volume=

0.086 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

A	rea (sf)	CN	Description				
*	9,015	98	impervious				
*	932	74	hsgC grass	, open			
-	9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	ious Ārea	еа		
Tc (min)	Length (feet)	Slop (ft/f		Capacity (cfs)	Description		
10.0					Direct Entry.		

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

5.78 cfs @ 12.13 hrs, Volume=

0.457 af, Depth> 4.37"

	Area (sf)	<u> CN</u>	Description				
*	41,229	98	impervious				
*	6,247	74	hsgC grass, open, some mulch				
*	4,922	72	wooded, trees				
*	2,258	98	roof				
	54,656	93	Weighted Average				
	11,169		20.44% Pervious Area				
	43,487		79.56% Impervious Area				

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021

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Tc (min)	Length (feet)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0				Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

1.06 cfs @ 12.14 hrs, Volume=

0.084 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description							
*		5,894	98	impervious	npervious						
*		5,182	74	hsgC grass	, open						
		11,076	87	Weighted A	eighted Average						
		5,182		46.79% Per	46.79% Pervious Area						
		5,894		53.21% lmp	53.21% Impervious Area						
	Тс	Length	Slop	e Velocity	Capacity	Description					
	(min)	(feet)	(ft/fi) (ft/sec)	(cfs)						
	10.0					Direct Entry.		······································			

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

3.35 cfs @ 12.13 hrs, Volume=

0.266 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description			
,	k	28,942	98	impervious			
1	k .	1,482	74	hsgC grass	, open		
_		30,424 1,482 28,942		Weighted A 4.87% Perv 95.13% Imp	ious Ărea	эа	
	Tc (min)	Length (feet)	Slope (ft/ft		Capacity (cfs)	Description	
-	10.0					Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff = 11.79 cfs @ 12.14 hrs, Volume=

0.930 af, Depth> 3.72"

Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021

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	Area (sf)	CN	Description						
*	44,913	98	impervious						
*	72,726	72	hsgC wood	ed, trees					
*	12,925	98	roof						
	130,564	84 Weighted Average							
	72,726			55.70% Pervious Area					
	57,838		44.30% Imp	ervious Are	a				
	T- 1 0	-							
	Tc Length	Slop		Capacity	Description				
	nin) (feet)	(ft/i	ft) (ft/sec)	<u>(cfs)</u>					
•	10.0				Direct Entry,				

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff

2.05 cfs @ 12.14 hrs, Volume=

0.162 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

		rea (sf)	CN	Description	<u></u>			
	*	9,091	98	impervious				—
	* 	13,655	74	hsgC grass	, open			
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	rvious Area			_
_	Tc (min)	Length (feet)	Slop (ft/ft		Capacity (cfs)	Description		
	10.0					Direct Entry.		_

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.19 cfs @ 12.13 hrs, Volume=

0.015 af, Depth> 4.59"

	Ar	ea (sf)	CN E	<u>Description</u>			
*		1,702	98 ii	mpervious			
		1,702	1	00.00% In	pervious A	rea	
	Tc nin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10	0.0			··· · · · · · · · · · · · · · · · · ·	,,	Direct Entry,	

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 21

Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

2.21 cfs @ 12.15 hrs, Volume=

0.177 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Area	(sf)	CN	Description						
*	1	737	98	impervious						
*	13	161	74	hsġC grass	, open					
*	17.	161	72	hsgC wood	ed, trees					
	32	32,059 74 Weighted Average								
	30	322	1	94.58% Pervious Area						
	1,	737	;	5.42% Impe	ervious Area	a				
	. Talla		Clana	\/ala=!4.	O	December 0				
		ength	Slope		Capacity	Description				
	·	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	10.0					Direct Entry,				

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.27 cfs @ 12.15 hrs, Volume=

0.021 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfali=5.95"

	A	rea (sf)	CN E	Description					
*		3,852	74 h	sgC grass	, open		_		
		3,852							
	Тс	Length	Slope	Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.0				***************************************	Direct Entry.	_		

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.43 cfs @ 12.13 hrs, Volume=

0.114 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	<u> </u>	rea (sf)	CN [Description	l		
*		12,979	98 r	oof			
		12,979	1	00.00% In	npervious A	Area	
	Тс	Length	Slope	Velocity	Capacity	Description	
<u>(n</u>	nin)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·	
1	10 N					Direct Entry	

1U.U

Direct Entry,

Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021

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Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 49.34% Impervious, Inflow Depth > 3.80" for 25-yr event

Inflow =

13.23 cfs @ 12.14 hrs, Volume=

1.044 af

Outflow =

12.96 cfs @ 12.18 hrs, Volume=

1.041 af, Atten= 2%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.44 fps, Min. Travel Time= 1.9 min

Avg. Velocity = 1.77 fps, Avg. Travel Time= 4.7 min

Peak Storage= 1,455 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.51'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75'

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area =

4.769 ac, 59.48% Impervious, Inflow Depth > 3.97" for 25-yr event

Inflow =

19.67 cfs @ 12.18 hrs, Volume= 1

1.576 af

Outflow =

19.71 cfs @ 12.19 hrs, Volume=

1.483 af, Atten= 0%, Lag= 0.5 min

Discarded =

0.06 cfs @ 12.19 hrs, Volume=

0.045 af

Primary =

19.65 cfs @ 12.19 hrs, Volume=

1.438 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.12' @ 12.19 hrs Surf.Area= 2,684 sf Storage= 4,835 cf

Plug-Flow detention time= 31.4 min calculated for 1.482 af (94% of inflow)

Center-of-Mass det. time= 10.2 min (795.6 - 785.4)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	559.44'	7,541 cf	Northerly Pond from Swale (Prismatic) Listed below (Recalc)

Elevation		Surf.Area	Inc.Store	Cum.Store
	(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
	559.44	0	0	0
	560.00	431	121	121
	562.00	1,819	2,250	2,371
	562.79	2,337	1,642	4,012
	563.00	2,585	517	4,529
	564.00	3,438	3,012	7,541

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 23

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.19 hrs HW=563.11' (Free Discharge) **12.19** hrs HW=563.11' (Free Discharge)

Primary OutFlow Max=19.37 cfs @ 12.19 hrs HW=563.11' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 19.37 cfs @ 1.45 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area =	1.435 ac, 81.68% Impervious, Inflow	Depth > 4.35" for 25-yr event
Inflow =	6.51 cfs @ 12.17 hrs, Volume=	0.520 af
Outflow =	6.55 cfs @ 12.19 hrs, Volume=	0.520 af, Atten= 0%, Lag= 1.2 min
Primary =	5.86 cfs @ 12.19 hrs, Volume=	0.514 af
Secondary =	0.70 cfs @ 12.20 hrs, Volume=	0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.14' @ 12.19 hrs Surf.Area= 177 sf Storage= 262 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 0.3 min (779.4 - 779.1)

Volume	Inver	t Avail.Sto	rage Storag	e Description		
#1	576.21	' 45	7 cf Small	Detention Pond (Prismatic) Listed below (Recalc)	
Elevatio	• •	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
576.2	:1	0	0	0		
577.0	10	56	22	22		
578.0	0	108	82	104		
579.0	0	162	135	239		
580.0	0	273	218	457		
Device	Routing	Invert	Outlet Devic	es		
#1	Primary	576.21'	12.0" Roun	d Culvert to Larg	e Pond	
					headwall, Ke= 0.500	
#2	Secondary	/ 579.00'	Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf 120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir Cv= 2.48 (C= 3.10)			

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 24

Primary OutFlow Max=5.76 cfs @ 12.19 hrs HW=579.06' TW=563.11' (Dynamic Tailwater)
1=Culvert to Large Pond (Barrel Controls 5.76 cfs @ 7.33 fps)

Secondary OutFlow Max=0.70 cfs @ 12.20 hrs HW=579.12' TW=563.12' (Dynamic Tailwater)

—2=Sharp-Crested Vee/Trap Weir (Weir Controls 0.70 cfs @ 1.08 fps)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area = 1.255 ac, 79.56% Impervious, Inflow Depth > 4.37" for 25-yr event

Inflow = 5.78 cfs @ 12.13 hrs, Volume= 0.457 af

Outflow = 5.78 cfs @ 12.13 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.0 min

Primary = 5.78 cfs @ 12.13 hrs, Volume= 0.457 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 579.80' @ 12.13 hrs

Flood Elev= 584.71'

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 577.00'
 12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=5.48 cfs @ 12.13 hrs HW=579.60' (Free Discharge)
1=Culvert (Inlet Controls 5.48 cfs @ 6.98 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area = 0.394 ac, 94.56% Impervious, Inflow Depth > 4.55" for 25-yr event

Inflow = 1.88 cfs @ 12.13 hrs, Volume= 0.149 af

Outflow = 1.88 cfs @ 12.13 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min

Primary = 1.88 cfs @ 12.13 hrs, Volume= 0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.43' @ 12.26 hrs

Flood Elev= 585.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	580.38'	15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107'/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.52 cfs @ 12.13 hrs HW=581.19' TW=581.15' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.52 cfs @ 0.87 fps)

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Type III 24-hr 25-yr Rainfall=5.95" Printed 9/15/2021 Page 25

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area = 0.953 ac, 83.94% Impervious, Inflow Depth > 4.40" for 25-yr event

Inflow = 4.41 cfs @ 12.13 hrs, Volume= 0.349 af

Outflow = 4.41 cfs @ 12.13 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min

Primary = 4.41 cfs @ 12.13 hrs, Volume= 0.349 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.47' @ 12.13 hrs

Flood Elev= 586.35'

Device Routing Invert Outlet Devices

#1 Primary 581.06' 15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.18 cfs @ 12.13 hrs HW=582.41' TW=581.15' (Dynamic Tailwater) 1=Culvert (Barrel Controls 4.18 cfs @ 3.93 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.346 ac, 87.05% Impervious, Inflow Depth > 4.45" for 25-yr event

Inflow = 6.29 cfs @ 12.13 hrs, Volume= 0.499 af

Outflow = 6.26 cfs @ 12.17 hrs, Volume= 0.499 af, Atten= 1%, Lag= 2.3 min

Primary = 6.26 cfs @ 12.17 hrs, Volume= 0.499 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.33' @ 12.17 hrs Surf.Area= 46 sf Storage= 368 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.1 min calculated for 0.493 af (99% of inflow)

Center-of-Mass det. time= 0.7 min (778.2 - 777.5)

<u>Volume</u>	Invert	Avail.Storage	Storage Description	
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder	
#2	579.36'		15.0" Round Pipe Storage	
			L= 177.0' S= 0.0038 '/"	
#3	579.36'	117 cf	15.0" Round Pipe Storage	
			L= 95.0' S= 0.0107 '/'	
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder	
		100 f		

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500
•			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012. Flow Area= 1.23 sf

Primary OutFlow Max=5.99 cfs @ 12.17 hrs HW=581.23' TW=578.99' (Dynamic Tailwater)

1=Culvert (Barrel Controls 5.99 cfs @ 4.88 fps)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

1.02 cfs @ 12.13 hrs, Volume=

0.081 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Α	rea (sf)	<u>CN</u>	Description			
*		7,195	98	impervious			
	7,195 100.00% Impervious Area						
_ (n	Tc nin)	Length (feet)	Slope (ft/ft)	,	Capacity (cfs)	.	
1	0.0					Direct Entry.	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.40 cfs @ 12.13 hrs, Volume=

0.111 af, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description			
4	•	9,015	98	impervious			
4		932	74	hsgC grass	, open		
		9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp			
_	Tc (min)	Length (feet)	Slop (ft/f	-	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 3S: DA-3 EASTERLY SITE TO EXISTING CATCH BASIN IN DRIVE

Runoff

7.52 cfs @ 12.13 hrs, Volume=

0.595 af, Depth> 5.69"

	Area (sf)	CN	Description
*	41,229	98	impervious
*	6,247	74	hsgC grass, open, some mulch
*	4,922	72	hsgC wooded, trees
*	2,258	98	roof
	54,656 11,169 43,487	93	Weighted Average 20.44% Pervious Area 79.56% Impervious Area

Type III 24-hr 100-yr Rainfall=7.61"

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_			Velocity (ft/sec)		Description
	10.0			······································	Direct Entry

Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff

1.43 cfs @ 12.14 hrs, Volume=

0.112 af, Depth> 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description						
4	•	5,894	98	impervious						
1	:	5,182	74	hsgC grass	, open					
		11,076 87 Weighted Average								
		5,182								
		5,894		53.21% lmp	pervious Ar					
	Tc	Length	Slop	•	Capacity	Description				
_	(min)	(feet)	(ft/fi	t) (ft/sec)	(cfs)					
	10.0					Direct Entry.				

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

4.29 cfs @ 12.13 hrs, Volume=

0.341 af, Depth> 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description					
	*	28,942	98	impervious					
	*	1,482	74	hsgC grass, open					
30,424 97 1,482 28,942				Weighted A 4.87% Perv 95.13% Imp	ious Area	ea			
	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description			
	10.0					Direct Entry,			

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff

16.06 cfs @ 12.14 hrs, Volume=

1.265 af, Depth> 5.06"

Type III 24-hr 100-yr Rainfall=7.61" Printed 9/15/2021

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_	Area	ı (sf)	CN	Description							
*	44	,913	98	impervious	mpervious						
*	72	,726	72	hsgC wood	hsgC wooded, trees						
*	12	,925	98	roof							
	130	,564	84	Weighted A	verage						
	72	,726		55.70% Pei	vious Area						
	57	,838		44.30% lmp	pervious Are	e a					
		ength (feet)	Slope (ft/ft)	-	Capacity (cfs)	Description					
	10.0					Direct Entry,					

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE TO OFFSITE

Runoff

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description						
4	•	9,091	98	impervious				_		
4	:	13,655	74	hsgC grass	, open					
		22,746	84	Weighted A		_				
		13,655		60.03% Pervious Area						
		9,091		39.97% I mp	pervious Are	эа	·			
	Tc (min)	Length (feet)	Slope (ft/ft	,	Capacity (cfs)	Description				
-	10.0			·	(===/	Direct Entry,		_		

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff =

0.24 cfs @ 12.13 hrs, Volume=

0.019 af, Depth> 5.89"

	Α	rea (sf)	CN I	Description		
,	*	1,702	98 i	mpervious		
	·	1,702	,	100.00% Im	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity	Description
-	10.0	(leet)	(IVIC)	(IVSec)	(cfs)	Direct Entry

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFF SITE

Runoff

3.23 cfs @ 12.14 hrs, Volume=

0.256 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description	·					
4	+	1,737	98	impervious	· · · · · ·			_		
*		13,161	74	hsgC grass	nsgC grass, open					
4	r	17,161	72	hsgC wood	sgC wooded, trees					
		32,059 30,322 1,737		Weighted A 94.58% Per 5.42% Impe	vious Area	a				
_	Tc (min)	Length (feet)	Slope (ft/ft		Capacity (cfs)	Description				
	10.0					Direct Entry.		_		

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.39 cfs @ 12.14 hrs, Volume=

0.031 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description				
*		3,852	74	hsgC grass	, open			
3,852 100.00% Pervious Area								
,	Тc	Length	Slope		Capacity	Description		
<u>(n</u>	nin)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
1	10.0					Direct Entry,		

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.84 cfs @ 12.13 hrs, Volume=

0.146 af, Depth> 5.89"

	Aı	rea (sf)	CN I	Description		
*		12,979	98	roof		
12,979 100.00% Impe					pervious A	Area
(r	Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)		Description
	10.0	(leet)	(IVIL)	(II/Sec)	(cfs)	Direct Entry

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Summary for Reach 6R: Swale - runs W to N

Inflow Area = 3.295 ac, 49.34% Impervious, Inflow Depth > 5.14" for 100-yr event

Inflow 17.90 cfs @ 12.14 hrs, Volume= 1.411 af

Outflow 17.52 cfs @ 12.18 hrs, Volume= 1.408 af, Atten= 2%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.85 fps, Min. Travel Time= 1.7 min Avg. Velocity = 1.97 fps. Avg. Travel Time= 4.2 min

Peak Storage= 1,801 cf @ 12,18 hrs Average Depth at Peak Storage= 0.60'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

4.00' x 1.50' deep channel, n= 0.025

Side Slope Z-value= 5.0 1.5 " Top Width= 13.75"

Length= 500.0' Slope= 0.0200 '/'

Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.769 ac, 59.48% Impervious, Inflow Depth > 5.29" for 100-yr event

Inflow 26.38 cfs @ 12.18 hrs, Volume= 2.103 af

Outflow = 26.53 cfs @ 12.19 hrs, Volume= 2.010 af, Atten= 0%, Lag= 0.6 min

0.06 cfs @ 12.18 hrs, Volume= Discarded = 0.046 af

Primary 26.47 cfs @ 12.19 hrs, Volume= 1.964 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.19' @ 12.18 hrs Surf.Area= 2,744 sf Storage= 5,026 cf

Plug-Flow detention time= 23.9 min calculated for 1.988 af (95% of inflow)

Center-of-Mass det. time= 8.0 min (791.3 - 783.3)

Volume	Invert	Avail.Storage	Storage Description
#1	559.44'	7,541 cf	Northerly Pond from Swale (Prismatic) Listed below (Recalc)
.			

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
559.44	0	0	0
560.00	431	121	121
562.00	1,819	2,250	2,371
562.79	2,337	1,642	4,012
563.00	2,585	517	4,529
564.00	3,438	3,012	7,541

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Type III 24-hr 100-yr Rainfall=7.61" Printed 9/15/2021 Page 31

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir
	•		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
			2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.06 cfs @ 12.18 hrs HW=563.18' (Free Discharge) 1—3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=25.69 cfs @ 12.19 hrs HW=563.18' (Free Discharge) —1=Broad-Crested Rectangular Weir (Weir Controls 25.69 cfs @ 1.61 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area =	1.435 ac, 81.68% Impervious, Inflow I	Depth > 5.65" for 100-yr event
Inflow =	8.40 cfs @ 12.15 hrs, Volume=	0.676 af
Outflow =	8.63 cfs @ 12.18 hrs, Volume=	0.676 af, Atten= 0%, Lag= 1.7 min
Primary =	6.09 cfs @ 12.16 hrs, Volume=	0.644 af
Secondary =	2.55 cfs @ 12.18 hrs, Volume=	0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.33' @ 12.16 hrs Surf.Area= 198 sf Storage= 298 cf

Plug-Flow detention time= 0.4 min calculated for 0.676 af (100% of inflow) Center-of-Mass det. time= 0.3 min (778.6 - 778.3)

Volume	Inve	ert Avail.Sto	rage Storage	Description	
#1	576.2	1' 4	57 cf Small D	etention Pond	(Prismatic) Listed below (Recalc)
Elevatio	on (Surf.Area	Inc.Store	Cum.Store	
(fee		(sq-ft)	(cubic-feet)	(cubic-feet)	
576.2	21	0	0	0	
577.0	00	56	22	22	
578.0	- -	108	82	104	
579.0		162	135	239	
580.0	00	273	218	457	
Device	Routing	Invert	Outlet Device	s	
#1	Primary	576.21'	12.0" Round	Culvert to Larg	ge Pond
					headwall, Ke= 0.500
					'575.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flo	w Area= 0.79 s	f
#2	Seconda	ry 579.00'	120.0 deg x 5	.0' long x 1.00'	rise Sharp-Crested Vee/Trap Weir

Cv= 2.48 (C= 3.10)

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Primary OutFlow Max=5.99 cfs @ 12.16 hrs HW=579.25' TW=563.17' (Dynamic Tailwater)
1=Culvert to Large Pond (Barrel Controls 5.99 cfs @ 7.63 fps)

Secondary OutFlow Max=2.25 cfs @ 12.18 hrs HW=579.26' TW=563.18' (Dynamic Tailwater)

—2=Sharp-Crested Vee/Trap Weir (Weir Controls 2.25 cfs @ 1.56 fps)

Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area = 1.255 ac, 79.56% Impervious, Inflow Depth > 5.69" for 100-yr event

Inflow = 7.52 cfs @ 12.13 hrs, Volume= 0.595 af

Outflow = 7.52 cfs @ 12.13 hrs, Volume= 0.595 af, Atten= 0%, Lag= 0.0 min

Primary = 7.52 cfs @ 12.13 hrs, Volume= 0.595 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.39' @ 12.13 hrs

Flood Elev≃ 584.71'

Primary OutFlow Max=7.14 cfs @ 12.13 hrs HW=581.06' (Free Discharge)
1=Culvert (Inlet Controls 7.14 cfs @ 9.08 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area = 0.394 ac, 94.56% Impervious, Inflow Depth > 5.85" for 100-yr event

Inflow = 2.42 cfs @ 12.13 hrs, Volume= 0.192 af

Outflow = 2.42 cfs @ 12.13 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Primary = 2.42 cfs @ 12.13 hrs, Volume= 0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.07' @ 12.24 hrs

Flood Elev= 585.40'

Device	Routing	Invert	Outlet Devices
#1 ·	Primary	580.38'	15.0" Round Culvert L= 95.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 580.38' / 579.36' S= 0.0107 '/' Cc= 0.900 n= 0.012. Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.52' TW=581.85' (Dynamic Tailwater) —1=Culvert (Controls 0.00 cfs)

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Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

0.953 ac, 83.94% Impervious, Inflow Depth > 5.71" for 100-vr event

Inflow

5.72 cfs @ 12.13 hrs. Volume=

Outflow =

5.72 cfs @ 12.13 hrs, Volume=

0.453 af, Atten= 0%, Lag= 0.0 min

5.72 cfs @ 12.13 hrs, Volume=

Primary

0.453 af

0.453 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs. dt= 0.10 hrs. Peak Elev= 583.36' @ 12.15 hrs

Primary

Flood Elev= 586.35'

Device Routing

#1

Invert Outlet Devices

581.06'

15.0" Round Culvert L= 177.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 581.06' / 580.39' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.17 cfs @ 12.13 hrs HW=583.23' TW=581.85' (Dynamic Tailwater) T-1=Culvert (Outlet Controls 5.17 cfs @ 4.22 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area =

=

1.346 ac, 87.05% Impervious, Inflow Depth > 5.75" for 100-yr event 0.645 af

Inflow

8.14 cfs @ 12.13 hrs, Volume= 8.01 cfs @ 12.15 hrs, Volume=

0.645 af, Atten= 2%, Lag= 1.0 min

Outflow Primary

8.01 cfs @ 12.15 hrs, Volume=

0.645 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.00' @ 12.15 hrs Surf.Area= 25 sf Storage= 387 cf

Flood Elev= 586.31' Surf.Area= 25 sf Storage= 496 cf

Plug-Flow detention time= 1.1 min calculated for 0.639 af (99% of inflow)

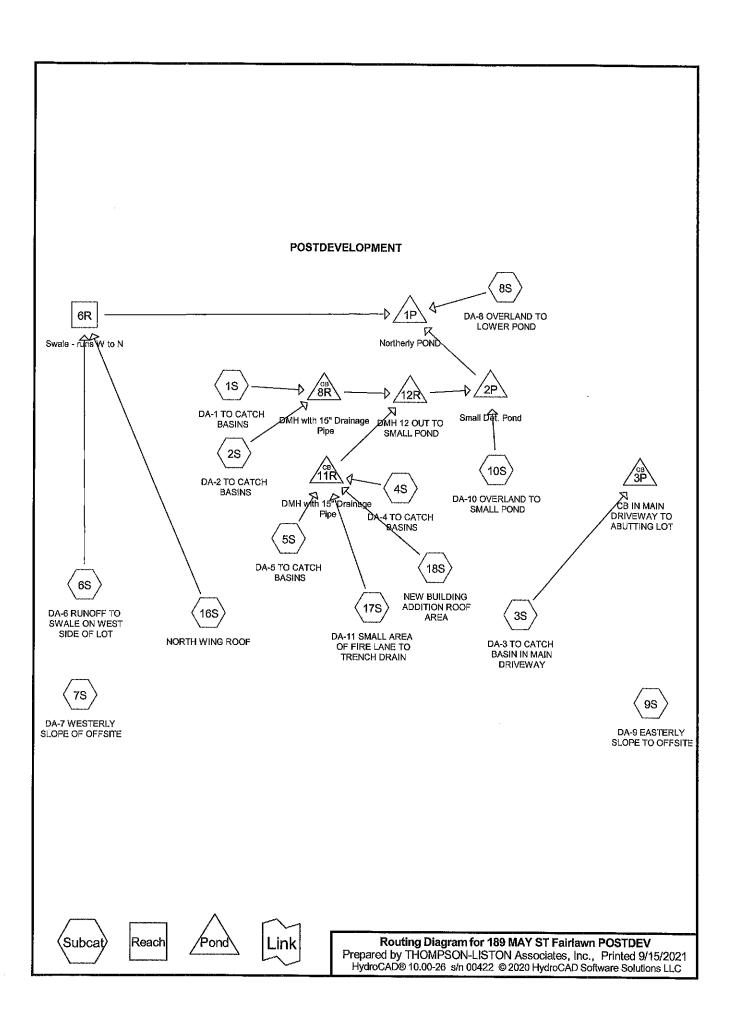
Center-of-Mass det. time= 0.7 min (777.6 - 776.9)

<u>Volume</u>	Invert	Avail.Storage	Storage Description	
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder	
#2	579.36'	217 cf	15.0" Round Pipe Storage	
			L= 177.0' S= 0.0038 '/'	
#3	579.36'	117 cf	15.0" Round Pipe Storage	
			L= 95.0' S= 0.0107 '/'	
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder	
		100 (T / 1 A / 1 0 /	

499 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900 n= 0.012 Flow Area= 1.23 sf

Primary OutFlow Max=7.61 cfs @ 12.15 hrs HW=581.85' TW=579.24' (Dynamic Tailwater) 1=Culvert (Barrel Controls 7.61 cfs @ 6.20 fps)



189 MAY ST Fairlawn POSTDEV

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.42 cfs @ 12.13 hrs, Volume=

0.033 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area	a (sf)	CN	Description				
*	7	,195	98	impervious			 	
	7	,195		100.00% Im	npervious A	rea		
(m		ength (feet)	Slope (ft/ft	Velocity (ft/sec)	Capacity (cfs)	Description		
10	0.0					Direct Entry,	 	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.55 cfs @ 12.13 hrs, Volume=

0.044 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description	<u> </u>				
*		9,015	98	impervious					
*		932	74	hsgC grass	sgC grass, open				
		9,947	96	Weighted A					
		932		9.37% Pervious Area					
		9,015		90.63% Imp	pervious Ar	ea			
	Тс	Length	Slop	e Velocity	Capacity	Description			
<u>(r</u>	nin)	(feet)	(ft/f) (ft/sec)	(cfs)				
•	10.0					Direct Entry,			

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

2.25 cfs @ 12.14 hrs, Volume=

0.177 af, Depth> 1.97"

	Area (sf)	CN	Description			
*	31,510	98	impervious			
*	7,119	74	nsgC grass, open, some mulch			
*	6,093	72	hsgC wooded, trees			
*	2,258	98	<u>roof</u>			
	46,980	91	Weighted Average			
	13,212		28.12% Pervious Area			
	33,768		71.88% Impervious Area			

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					Description
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)	
10.0					Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff

0.43 cfs @ 12.14 hrs, Volume=

0.034 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN	Description	1	_	
*		5,963	98	impervious			
*		4,221	74	hsgC grass	, open		
		10,184 4,221 5,963	88	Weighted A 41.45% Per 58.55% Imp	rvious Area		
-	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description	
	10.0				, ,,,,	Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

1.73 cfs @ 12.13 hrs, Volume=

0.137 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	Α	rea (sf)	CN	Description			
,	*	28,942	98	impervious			
•	*	1,482	74	hsgC grass	, open		
		30,424 1,482 28,942	97	Weighted A 4.87% Perv 95.13% Imp	ious Area	rea	
	Tc (min)	Length (feet)	Slope (ft/ft	-	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff 4.46 cfs @ 12.15 hrs, Volume=

0.359 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

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_	Are	a (sf)	CN	Description			
*	4	3,513	98	mpervious			
*	7	4,098	72	hsgC wood	ed, trees		
*	1:	2,925	98	roof			
	7	0,536 4,098 5,438			verage vious Area pervious Ar		
	Tc I (min)	ength	Slope (ft/ft)		Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff :

0.82 cfs @ 12.15 hrs, Volume=

0.065 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Α	rea (sf)	CN	Description				
*		9,091	98	impervious			 	
*		13,655	74	hsgC grass	, open			
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	rvious Area			
	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description		
	10.0					Direct Entry,	 	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.10 cfs @ 12.13 hrs, Volume=

0.008 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

_	A	rea (sf)	CN	Description		
*		1,702	98	impervious		
		1,702		100.00% In	npervious A	Area
	Tc (min)	Length (feet)	Siope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	•
_	10.0	<u> </u>			<u>\</u> \	Direct Entry.

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

0.63 cfs @ 12.17 hrs, Volume=

0.054 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area (sf) CN	D	escription			
*	g	21 98	in	npervious			
*	13,2	18 74	h:	sgC grass	, open		
*	17,1	94 72	h	sgC wood	ed, trees		
	31,3	33 74	· V	eighted A	verage		
	30,4	12	9	7.06% Per	vious Area		
	9	21	2.	.94% Impe	ervious Area	a	
	Tc Ler	ngth Slo	ope	Velocity	Capacity	Description	
<u>(n</u>	nin) (f	eet) (f	t/ft)	(ft/sec)	(cfs)	<u>. </u>	
1	0.0			_		Direct Entry,	

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.08 cfs @ 12.17 hrs, Volume=

0.007 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	A	rea (sf)	CN [Description			
*		3,852	74 ł	nsgC grass	, open		
		3,852		100.00% Pe	ervious Are	эа	
	Tc	Length	Slope	•	Capacity		
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.0					Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

0.75 cfs @ 12.13 hrs, Volume=

0.059 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area	(sf)	<u>CN</u> [Description		
*	12	,979	98 r	oof		
	12	,979	1	00.00% Im	npervious A	Area
(mi		ength (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	
	0.0	1.001)	(1414)	(12000)	(010)	Direct Entry.

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

==

0.16 cfs @ 12.14 hrs, Volume=

0.013 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

	Area	(sf)	CN	Description			
*	2,3	311	98	impervious	pav		
*	1,0	026		pervious gr	-		
	1,0	337 026 311		Weighted A 30.75% Per 69.25% Imp	rvious Area		
<u>(n</u>		ngth feet)	Slope (ft/ft		Capacity (cfs)	Description	
1	0.0					Direct Entry,	

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

=

0.42 cfs @ 12.13 hrs, Volume=

0.033 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 2-yr Rainfall=3.14"

A	rea (sf)	CN I	Description			
	7,255	98 1	Roofs, HSC	C		
	7,255	•	100.00% lm	pervious A	rea	
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10.0			,,	10.07	Direct Entry,	

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 1.52" for 2-yr event

Inflow =

5.21 cfs @ 12.15 hrs, Volume=

0.418 af

Outflow =

5.11 cfs @ 12.19 hrs, Volume=

0.417 af, Atten= 2%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 3.34 fps, Min. Travel Time= 2.5 min

Avg. Velocity = 1.28 fps, Avg. Travel Time= 6.5 min

Peak Storage= 765 cf @ 12.19 hrs

Average Depth at Peak Storage= 0.31'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

#3

Discarded

559.44'

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 1.74" for 2-yr event Inflow = 8.71 cfs @ 12.20 hrs, Volume= 0.725 af Outflow = 8.83 cfs @ 12.21 hrs, Volume= 0.632 af, Atten= 0%, Lag= 0.7 min Discarded = 0.06 cfs @ 12.21 hrs, Volume= 0.042 af Primary = 8.77 cfs @ 12.21 hrs, Volume= 0.590 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 562.98' @ 12.21 hrs Surf.Area= 2,561 sf Storage= 4,476 cf

Plug-Flow detention time= 55.1 min calculated for 0.626 af (86% of inflow) Center-of-Mass det. time= 18.5 min (811.6 - 793.1)

Volume	Inv	ert Avail.Sto	rage Storage	Description	
#1	559.	44' 7,5	41 cf Norther	ly Pond from S	wale (Prismatic) Listed below (Recalc)
Clauratio	- 10	C A	l O1	0 0	,
Elevation		Surf.Area	Inc.Store	Cum.Store	
(fee	>t)	(sq-ft)	(cubic-feet)	(cubic-feet)	
559.4	14	0	0	0	
560.0	00	431	121	121	
562.0	00	1,819	2,250	2,371	
562.7	79	2,337	1,642	4,012	
563.0	00	2,585	517	4,529	
564.0	00	3,438	3,012	7,541	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	562.78'	40.0' long x	9.0' breadth Bro	pad-Crested Rectangular Weir
	•				0.80 1.00 1.20 1.40 1.60 1.80 2.00
				50 4.00 4.50 5	
					70 2.69 2.68 2.68 2.67 2.64 2.64 2.64
				65 2.65 2.66 2	
#2	Primary	563.30'			-Crested Rectangular Weir
	•			0.49 0.98 1.48	
				h) 3.48 3.50 3.	48
			, J	,	

1.020 in/hr Exfiltration over Horizontal area

Volume

Invert

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Discarded OutFlow Max=0.06 cfs @ 12.21 hrs HW=562.98' (Free Discharge) **12.21 hrs** HW=562.98' (Free Discharge)

Primary OutFlow Max=8.63 cfs @ 12.21 hrs HW=562.98' (Free Discharge)
—1=Broad-Crested Rectangular Weir (Weir Controls 8.63 cfs @ 1.09 fps)
—2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 2.17" for 2-yr event
Inflow = 3.52 cfs @ 12.19 hrs, Volume= 0.300 af
Outflow = 3.51 cfs @ 12.20 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.6 min
Primary = 3.51 cfs @ 12.20 hrs, Volume= 0.300 af
Secondary = 0.00 cfs @ 10.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 577.58' @ 12.20 hrs Surf.Area= 86 sf Storage= 63 cf

Plug-Flow detention time= 0.2 min calculated for 0.300 af (100% of inflow) Center-of-Mass det. time= 0.2 min (781.8 - 781.6)

Avail Storage Storage Description

#1 576.21' 457 cf Small Detention Pond (Prismatic) Listed below Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)	
	(Recalc)
576.21 0 0 0	
577.00 56 22 22	
578.00 108 82 104	
579.00 162 135 239	
580.00 273 218 457	

Device	Routing	Invert	Outlet Devices
#1	Primary	576.21'	12.0" Round Culvert to Large Pond
			L= 49.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flow Area= 0.79 sf
#2	Secondary	579.00'	120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir
			Cv= 2.48 (C= 3.10)

Primary OutFlow Max=3.50 cfs @ 12.20 hrs HW=577.57' TW=562.98' (Dynamic Tailwater)
—1=Culvert to Large Pond (Barrel Controls 3.50 cfs @ 4.45 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.39' TW=559.71' (Dynamic Tailwater) —2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 1.97" for 2-yr event

Inflow

2.25 cfs @ 12.14 hrs. Volume=

0.177 af

Outflow

#1

==

2.25 cfs @ 12.14 hrs, Volume=

0.177 af, Atten= 0%, Lag= 0.0 min

Primary = 2.25 cfs @ 12.14 hrs. Volume=

0.177 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 577.85' @ 12.14 hrs

Flood Elev= 584.71'

Primary

Device Routina Invert Outlet Devices

577.00'

580.381

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.13 cfs @ 12.14 hrs HW=577.82' (Free Discharge)

1=Culvert (Inlet Controls 2.13 cfs @ 3.08 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 2.34" for 2-vr event

Inflow

0.97 cfs @ 12.13 hrs, Volume=

0.077 af

Outflow Primary

0.97 cfs @ 12.13 hrs, Volume= 0.97 cfs @ 12.13 hrs. Volume=

0.077 af, Atten= 0%, Lag= 0.0 min 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.96' @ 12.20 hrs

Flood Elev= 585.40'

Device Routing Invert Outlet Devices

#1 Primary **15.0" Round Culvert** L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.73 cfs @ 12.13 hrs HW=580.93' TW=580.49' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.73 cfs @ 2.05 fps)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 2.22" for 2-yr event

Inflow

2.74 cfs @ 12.14 hrs, Volume=

0.217 af

Outflow = Primary

2.74 cfs @ 12.14 hrs, Volume= 2.74 cfs @ 12.14 hrs, Volume=

0.217 af, Atten= 0%, Lag= 0.0 min 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.90' @ 12.14 hrs

Flood Elev= 586.35'

Device	Routing
#1	Drimon

Invert Outlet Devices

581.06

15.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.60 cfs @ 12.14 hrs HW=581.87' TW=580.50' (Dynamic Tailwater) 1=Culvert (Inlet Controls 2.60 cfs @ 3.07 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 2.25" for 2-yr event

Inflow = 3.71 cfs @ 12.13 hrs, Volume= 0.294 af

Outflow = 3.45 cfs @ 12.19 hrs, Volume= 0.294 af, Atten= 7%, Lag= 3.5 min

Primary = 3.45 cfs @ 12.19 hrs, Volume= 0.294 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.61' @ 12.19 hrs Surf.Area= 777 sf Storage= 362 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 1.4 min calculated for 0.293 af (100% of inflow)

Center-of-Mass det. time= 0.9 min (780.7 - 779.7)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'		36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
#7	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
•			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=3.41 cfs @ 12.19 hrs HW=580.60' TW=577.56' (Dynamic Tailwater)

-1=Culvert (Passes 3.41 cfs of 4.17 cfs potential flow)

-2=Orifice/Grate (Passes 3.41 cfs of 3.80 cfs potential flow)

3=Orifice/Grate (Orifice Controls 3.41 cfs @ 4.13 fps)

-4=Orifice/Grate (Controls 0.00 cfs)

-5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Type III 24-hr 10-yr Rainfall≃4.87" Printed 9/15/2021 Page 11

Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

=

0.65 cfs @ 12.13 hrs, Volume=

0.052 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN [escription			
*		7,195	98 ir	npervious			
		7,195	1	00.00% lm	pervious A	Area	 -
	Tc	Length			Capacity	Description	
-	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.0					Direct Entry,	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

0.88 cfs @ 12.13 hrs, Volume=

0.070 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	A	rea (sf)	CN	Description				
,	k	9,015	98	impervious				
1	*	932	74	hsgC grass	, open			
		9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	rious Ārea	ea		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Tc (min)	Length (feet)	Slop (ft/f	~	Capacity (cfs)	Description		
	10.0					Direct Entry.	 	

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

3.85 cfs @ 12.14 hrs, Volume=

0.303 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Area (st)	<u>CN</u>	Description
*	31,510	98	impervious
*	7,119	74	hsgC grass, open, some mulch
*	6,093	72	hsgC wooded, trees
*	2,258	98	roof
	46,980	91	Weighted Average
	13,212		28.12% Pervious Area
	33,768		71.88% Impervious Area

Type III 24-hr 10-yr Rainfall=4.87"

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Tc (min)		Velocity (ft/sec)	Description
10.0			Direct Entry,

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

0.78 cfs @ 12.14 hrs, Volume=

0.062 af, Depth> 3.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description			
*		5,963	98	impervious			
*		4,221	74	hsgC grass	, open		
		10,184	88	Weighted A	verage		
		4,221		41.45% Per			
		5,963		58.55% lmp	pervious Ar	ea	
	Тс	Length	Slop	,	Capacity	Description	
_	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)		
	10.0					Direct Entry.	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

2.73 cfs @ 12.13 hrs, Volume=

0.216 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

A	rea (sf)	CN	Description					
*	28,942	98	impervious					
*	1,482	74	hsgC grass	, open				
	30,424	97	Weighted A	verage		***************************************		
	1,482		4.87% Perv					
	28,942		95.13% lmp	ervious Are	ea			
Тс	Length	Slope	e Velocity	Capacity	Description			
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)				
10.0					Direct Entry.			

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff

8.76 cfs @ 12.14 hrs, Volume=

0.694 af, Depth> 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

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	Ar	ea (sf)	CN	Description		
*		43,513	98	mpervious		
*	-	74,098	72	hsgC wood	ed, trees	
*		12,925	98	roof		
	130,536 83 Weighted Average					
		74,098			vious Area	•
	į	56,438	•	43.24% lmp	pervious Are	rea
	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description
	10.0					Direct Entry,

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff =

1.57 cfs @ 12.14 hrs, Volume=

0.124 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

_	Α	rea (sf)	CN	Description	l					
*		9,091	98	impervious	mpervious					
*		13,655	74	hsgC grass	, open					
		22,746 13,655 9,091	84	Weighted A 60.03% Per 39.97% Imp	rvious Area					
	Tc (min)	Length (feet)	Slop (ft/ft	_	Capacity (cfs)	Description				
	10.0					Direct Entry,				

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.15 cfs @ 12.13 hrs, Volume=

0.012 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description			
*		1,702	98	mpervious			
		1,702		100.00% Im	pervious A	rea	
	Tc	Length				Description	
_	(min)	(feet)	<u>(ft/ft)</u>	(ft/sec)	(cfs)		
	10.0					Direct Entry.	

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

1.54 cfs @ 12.15 hrs, Volume=

0.125 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	A	rea (sf)	CN	Description	escription					
*		921	98	impervious	npervious					
*		13,218	74	hsgC grass	sgC grass, open					
*		17,194	72	hsgC wood	sgC wooded, trees					
		31,333	74	Weighted A	verage					
		30,412		97.06% Per	vious Area					
		921		2.94% Impe	ervious Area	a				
(Tc (min)	Length (feet)	Slope (ft/ft		Capacity (cfs)	Description				
_	10.0	(.00.)	(/ (1000)	(0.0)	Direct Entry,				

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.19 cfs @ 12.15 hrs, Volume=

0.015 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfali=4.87"

	Area (sf)	_CN [<u>Description</u>			
*	3,852	74 H	nsgC grass	, open		
	3,852			ervious Are	эа	
T (mir	c Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10.	' ' ' '	(1010)	(1000)	(0.0)	Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

1.17 cfs @ 12.13 hrs, Volume=

0.093 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

	Are	a (sf)	CN L	Description				
*	12	2,979	98 r	oof				
12,979			100.00% Impervious Area			rea		
(Tc L min)	ength	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
	10.0		· · · · · · · · · · · · · · · · · · ·			Direct Entry,	 	

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 15

Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.27 cfs @ 12.14 hrs, Volume=

0.022 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4,87"

	Area (sf)	CN	Description						
*	2,311	98	impervious	mpervious pav					
*	1,026	74	pervious gr	pervious grass					
	3,337	91	Weighted A	verage					
	1,026		30.75% Per	30.75% Pervious Area					
	2,311		69.25% lm	pervious Ar	rea				
	C Length	Slop		Capacity					
(mi		(ft/f	t) (ft/sec)	(cfs)					
10	.0				Direct Entry,				

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

0.66 cfs @ 12.13 hrs, Volume=

0.052 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 10-yr Rainfall=4.87"

A	rea (sf)	CN	Description						
	7,255	98	Roofs, HSC	S C					
	7,255		100.00% Impervious Area						
Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description				
10.0					Direct Entry.				

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 2.87" for 10-yr event

Inflow

9.93 cfs @ 12.14 hrs, Volume=

0.787 af

Outflow

9.75 cfs @ 12.18 hrs, Volume=

0.784 af, Atten= 2%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.08 fps, Min. Travel Time= 2.0 min Avg. Velocity = 1.60 fps, Avg. Travel Time= 5.2 min

Peak Storage= 1,193 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.44'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

564.00

3,438

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 16

4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 3.09" for 10-yr event Inflow

15.09 cfs @ 12.20 hrs, Volume= 1.285 af

15.15 cfs @ 12.20 hrs, Volume= Outflow 1.192 af, Atten= 0%, Lag= 0.6 min

Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.044 af Primary 15.09 cfs @ 12.20 hrs, Volume= 1.148 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.06' @ 12.20 hrs Surf.Area= 2,639 sf Storage= 4,695 cf

Plug-Flow detention time= 35.5 min calculated for 1.179 af (92% of inflow) Center-of-Mass det. time= 12.0 min (799.8 - 787.7)

3,012

Volume	Invert	Avai	I.Storage	Storage	e Description	
#1	559.44'		7,541 cf	Norther	ly Pond from S	wale (Prismatic) Listed below (Recalc)
Elevation (feet)		Area sq-ft)		Store: c-feet)	Cum.Store (cubic-feet)	
559.44		0	· ·	0	0	
560.00		431		121	121	
562.00	1	1,819		2,250	2,371	
562.79	2	2,337		1,642	4,012	
563.00	2	2,585		517	4,529	

7,541

Device	Routing	Invert	Outlet Devices
#1	Primary	562.78'	40.0' long x 9.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.65 2.64 2.65 2.65 2.66 2.67 2.69
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.48 3.50 3.48
#3	Discarded	559.44'	1.020 in/hr Exfiltration over Horizontal area

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Type III 24-hr 10-yr Rainfall=4.87" Printed 9/15/2021 Page 17

Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.06' (Free Discharge) T-3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=14.96 cfs @ 12.20 hrs HW=563.06' (Free Discharge) -1=Broad-Crested Rectangular Weir (Weir Controls 14.96 cfs @ 1.33 fps) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 3.53" for 10-yr event Inflow 5.43 cfs @ 12.21 hrs, Volume= 0.488 af Outflow = 5.32 cfs @ 12.24 hrs, Volume= 0.488 af, Atten= 2%, Lag= 1.6 min Primary = 5.32 cfs @ 12.24 hrs, Volume= 0.488 af Secondary = 0.00 cfs @ 10.00 hrs. Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 578.70' @ 12.24 hrs Surf.Area= 146 sf Storage= 193 cf

Plug-Flow detention time= 0.3 min calculated for 0.483 af (99% of inflow) Center-of-Mass det. time= 0.2 min (780.2 - 780.0)

Volume	Invert	Avail.Sto	rage Stora	ge Description	
#1	576.21'	4	57 cf Small	Detention Pond	(Prismatic) Listed below (Recalc)
Elevation	Surf	.Area	Inc.Store	Cum.Store	
(feet)		sq-ft)	(cubic-feet)	(cubic-feet)	
576.21		0	0	0	
577.00		56	22	22	
578.00		108	82	104	
579.00		162	135	239	
580.00		273	218	457	
.					
Device Ro	outing	Invert	Outlet Devi	ces	

DOVICE	itouting	HIVEIL	Outlet Devices
#1	Primary	576.21'	12.0" Round Culvert to Large Pond
			L= 49.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900
			n= 0.012, Flow Area= 0.79 sf
#2	Secondary	579.00'	120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir
			Cv= 2.48 (C= 3.10)

Primary OutFlow Max=5.19 cfs @ 12.24 hrs HW=578.62' TW=563.05' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 5.19 cfs @ 6.61 fps)

Secondary OutFlow Max=0.00 cfs @ 10.00 hrs HW=576.45' TW=559.81' (Dynamic Tailwater) 2=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 3.37" for 10-yr event

Inflow

3.85 cfs @ 12.14 hrs, Volume=

0.303 af

Outflow = 3.85 cfs @ 12.14 hrs, Volume=

0.303 af, Atten= 0%, Lag= 0.0 min

Primary

3.85 cfs @ 12.14 hrs, Volume=

0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 578.52' @ 12.13 hrs

Flood Elev= 584.71'

Device Routing

Invert Outlet Devices

#1 Primary 577.00

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.64 cfs @ 12.14 hrs HW=578.43' (Free Discharge)

-1=Culvert (Inlet Controls 3.64 cfs @ 4.64 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 3.70" for 10-yr event

Inflow

1.53 cfs @ 12.13 hrs, Volume=

0.121 af

Outflow = 1.53 cfs @ 12.13 hrs. Volume=

0.121 af, Atten= 0%, Lag= 0.0 min

Primary

1.53 cfs @ 12.13 hrs. Volume=

0.121 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.61' @ 12.30 hrs

Flood Elev= 585.40'

Device Routing

Outlet Devices Invert

#1 **Primary** 580.38'

15.0" Round Culvert L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.19' TW=581.24' (Dynamic Tailwater)

-1=Culvert (Controls 0.00 cfs)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 3.59" for 10-yr event

Inflow Outflow =

4.44 cfs @ 12.13 hrs, Volume= 4.44 cfs @ 12.13 hrs, Volume=

0.351 af 0.351 af, Atten= 0%, Lag= 0.0 min

Primary

4.44 cfs @ 12.13 hrs. Volume=

0.351 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.23' @ 12.13 hrs

Flood Elev= 586.35'

Device Routing Invert Outlet Devices

#1 Primary

581.06' **15.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.96 cfs @ 12.13 hrs HW=582.19' TW=581.24' (Dynamic Tailwater) 1=Culvert (Outlet Controls 3.96 cfs @ 4.49 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 3.62" for 10-yr event

Inflow = 5.97 cfs @ 12.13 hrs, Volume= 0.473 af

Outflow = 5.26 cfs @ 12.21 hrs, Volume= 0.473 af, Atten= 12%, Lag= 4.6 min

Primary = 5.26 cfs @ 12.21 hrs, Volume= 0.473 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 581.55' @ 12.21 hrs Surf.Area= 684 sf Storage= 891 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 1.7 min calculated for 0.472 af (100% of inflow)

Center-of-Mass det. time= 1.3 min (779.2 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	459 cf	36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
#7	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0,600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=5.17 cfs @ 12.21 hrs HW=581.52' TW=578.64' (Dynamic Tailwater)

-1=Culvert (Passes 5.17 cfs of 6.79 cfs potential flow)

-2=Orifice/Grate (Passes 5.17 cfs of 5.80 cfs potential flow)

-3=Orifice/Grate (Orifice Controls 5.11 cfs @ 6.19 fps)
-4=Orifice/Grate (Orifice Controls 0.05 cfs @ 1.17 fps)

-5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

0.80 cfs @ 12.13 hrs, Volume=

0.063 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	<u> </u>	rea (sf)	CN I	Description		
*		7,195	98 i	mpervious		
		7,195		100.00% Im	pervious A	Area
/1	Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	10.0	(1001)	11011/	(10300)	(015)	Direct Entry.

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.09 cfs @ 12.13 hrs, Volume=

0.086 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

A	rea (sf)	CN	Description			
*	9,015	98	impervious			
*	932	74	hsgC grass	, open		
	9,947 932 9,015		Weighted A 9.37% Perv 90.63% Imp	ious Ārea	эа	
Tc (min)	Length (feet)	Slope (ft/ft		Capacity (cfs)	Description	
10.0					Direct Entry,	

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

4.84 cfs @ 12.14 hrs, Volume=

0.381 af, Depth> 4,24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Area (sf)	CN	Description
*	31,510	98	impervious
*	7,119	74	hsgC grass, open, some mulch
*	6,093	72	hsgC wooded, trees
*	2,258	98	roof
	46,980 13,212 33,768	91	Weighted Average 28.12% Pervious Area 71.88% Impervious Area
	55,700		7 1.00 % impervious Area

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Tc (min)		Velocity (ft/sec)	Capacity (cfs)	Description	
10.0				Direct Entry,	

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

1.00 cfs @ 12.14 hrs, Volume=

0.079 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description			
*		5,963	98	impervious			
*		4,221	74	hsgC grass	, open		
		10,184 4,221 5,963	88	Weighted A 41.45% Pe 58.55% Imp	rvious Area		
-	Tc (min)	Length (feet)	Slop (ft/f	•	Capacity (cfs)	Description	
	10.0					Direct Entry,	

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff :

3.35 cfs @ 12.13 hrs, Volume=

0.266 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	<u>CN</u>	Description				
,	*	28,942	98	impervious			···	, , , , , , , , , , , , , , , , , , ,
	*	1,482	74	hsgC grass	, open			
		30,424 1,482 28,942	97	Weighted A 4.87% Perv 95.13% Imp	ious Area	ea		
_	Tc (min)	Length (feet)	Slop (ft/ft	-	Capacity (cfs)	Description		
	10.0	-				Direct Entry,		

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff = 11.53 cfs @ 12.14 hrs, Volume=

0.909 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

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	Area (sf)	CN	Description			
*	43,513	98	impervious			<u> </u>
*	74,098	72	hsgC woode	d, trees		
*	12,925	98	roof			
	• • • • • • • • • • • • • • • • • • •				ea	
(mi		Slop (ft/l	•	Capacity (cfs)	Description	
10	1.0				Direct Entry.	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Runoff

2.05 cfs @ 12.14 hrs, Volume=

0.162 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Area	(sf)	CN	Description	l		
*	9	091	98	impervious			
*	13,	655	_ 74	hsgC grass	, open		
	22,	746	84	Weighted A	verage		
	13,	655					
	9,	091		39.97% lm	pervious Ar	ea	
,		ength	Slope		Capacity	Description	
(m	nin) (feet)	(ft/ft	(ft/sec)	(cfs)	· · · · · · · · · · · · · · · · · · ·	
11	0.0					Direct Entry,	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.19 cfs @ 12.13 hrs, Volume=

0.015 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description	<u> </u>	
*		1,702	98	impervious		
		1,702		100.00% In	pervious A	Area
ſr	Tc nin)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	
	10.0	1.001/	(1010)	(.4600)	1010/	Direct Entry

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

=

2.16 cfs @ 12.15 hrs, Volume=

0.173 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description					
•	•	921	98	impervious					
*	*	13,218	74	nsgC grass, open					
-	k 	17,194 72 hsgC wooded, trees							
		31,333 30,412 921		Weighted A 97.06% Per 2.94% Impe	vious Area	a			
_	Tc (min)	Length (feet)	Slope (ft/ft		Capacity (cfs)	Description			
	10.0					Direct Entry,			

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.27 cfs @ 12.15 hrs, Volume=

0.021 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	Area (sf	<u> </u>	<u> </u>	escription			
*	3,852	2 74	4 h	sgC grass	, open		<u>, , , , , , , , , , , , , , , , , </u>
	ea						
- <u>(mi</u>	Гс Leng n) (fee		lope ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10	.0					Direct Entry,	

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff =

1.43 cfs @ 12.13 hrs, Volume=

0.114 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

	A	rea (sf)	CN	Description		
*		12,979	98	roof	· · · · · · · · · · · · · · · · · · ·	
		12,979	979 100.00% Impervious A			Area
(Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	10.0					Direct Entry

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.34 cfs @ 12.14 hrs, Volume=

0.027 af, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5,95"

	Ar	ea (sf)	_CN	Description	<u> </u>						
*		2,311	98	impervious	mpervious pav						
*		1,026	74	pervious gr	pervious grass						
		3,337	91	Weighted A	verage						
		1,026		30.75% Pe	30.75% Pervious Area						
		2,311		69.25% lm _l	pervious Ar	rea					
(n	Tc nin)	Length (feet)	Slope (ft/ft	7	Capacity (cfs)						
1	0.0				- <u>-</u> -	Direct Entry,					

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

=

0.80 cfs @ 12.13 hrs, Volume=

0.064 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 25-yr Rainfall=5.95"

_	A	rea (sf)	CN	Description		
_		7,255	98	Roofs, HSC	G C	
		7,255		100.00% Im	pervious A	Area
_	Tc (min)	Length (feet)	Slope (ft/ft	7	Capacity (cfs)	Description
_	10.0					Direct Entry,

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 3.73" for 25-yr event

Inflow

12.96 cfs @ 12.14 hrs, Volume=

1.023 af

Outflow

12.71 cfs @ 12.18 hrs, Volume=

1.021 af, Atten= 2%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Max. Velocity= 4.42 fps, Min. Travel Time= 1.9 min

Avg. Velocity = 1.76 fps, Avg. Travel Time= 4.7 min

Peak Storage= 1.435 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.51'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

#3

Discarded

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 3.95" for 25-yr event
Inflow = 19.68 cfs @ 12.19 hrs, Volume= 1.641 af
Outflow = 19.67 cfs @ 12.20 hrs, Volume= 1.548 af, Atten= 0%, Lag= 0.5 min
Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.045 af
Primary = 19.61 cfs @ 12.20 hrs, Volume= 1.503 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.12' @ 12.20 hrs Surf.Area= 2,684 sf Storage= 4,834 cf

Plug-Flow detention time= 30.4 min calculated for 1.547 af (94% of inflow) Center-of-Mass det. time= 9.9 min (795.7 - 785.8)

<u>Volume</u>	Inv	<u>ert Avail.Sto</u>	I.Storage Storage Description					
#1	559.4	44' 7,5	41 cf Norther	ly Pond from Swale (Prismatic) Listed below (Recald	c)			
Elevatio		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)				
559.4	14	0	0	ó				
560.0	00	431	121	121				
562.0		1,819	2,250	2,371				
562.7		2,337	1,642	4,012				
563.0		2,585	517	4,529				
564.0)()	3,438	3,012	7,541				
Device	Routing	Invert	Outlet Device	s				
#1	Primary	562.78'	40.0' long x 9	9.0' breadth Broad-Crested Rectangular Weir				
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50					
				Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64 2.64				
			2.65 2.64 2.65 2.65 2.66 2.67 2.69					
#2	Primary	563.30'	40.0' long (Profile 29) Broad-Crested Rectangular Weir					
				0.49 0.98 1.48				
			Coet. (English	1) 3.48 3.50 3.48				

559.44' 1.020 in/hr Exfiltration over Horizontal area

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Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.11' (Free Discharge) —3=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=19.53 cfs @ 12.20 hrs HW=563.11' (Free Discharge) **−1=Broad-Crested Rectangular Weir** (Weir Controls 19.53 cfs @ 1.46 fps) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 4.38" for 25-yr event Inflow 7.02 cfs @ 12.21 hrs, Volume= 0.605 af 6.93 cfs @ 12.22 hrs, Volume= Outflow = 0.605 af, Atten= 1%, Lag= 0.7 min Primary 5.95 cfs @ 12.24 hrs, Volume= 0.595 af Secondary = 1.01 cfs @ 12.21 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.21' @ 12.24 hrs Surf Area= 185 sf Storage= 276 cf

Plug-Flow detention time= 0.4 min calculated for 0.605 af (100% of inflow) Center-of-Mass det. time= 0.3 min (779.7 - 779.4)

Volume	Invert	Avail.Sto	rage S	torage De	escription	
#1	576.21'	4	57 cf S	mall Dete	ntion Pond	(Prismatic) Listed below (Recalc)
Elevation (feet)		.Area sq-ft)	Inc.St cubic-fe		Cum.Store (cubic-feet)	
576.21		0		0	0	
577.00		56		22	22	
578.00		108		82	104	
579.00		162	•	135	239	
580.00		273	2	218	457	
Device Re	outing	Invert	Outlet I	Devices		

#1 Primary 576.21	12.0" Round Culvert to Large Pond
	L= 49.0' CPP, square edge headwall, Ke= 0.500
	Inlet / Outlet Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900
	n= 0.012, Flow Area= 0.79 sf
#2 Secondary 579.00	120.0 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir
	Cv= 2.48 (C= 3.10)

Primary OutFlow Max=5.84 cfs @ 12.24 hrs HW=579.12' TW=563.10' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 5.84 cfs @ 7.43 fps)

Secondary OutFlow Max=0.93 cfs @ 12.21 hrs HW=579.15' TW=563.11' (Dynamic Tailwater) 1.19 fps)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 4.24" for 25-yr event

Inflow

4.84 cfs @ 12.14 hrs, Volume=

0.381 af

Outflow

4.84 cfs @ 12.14 hrs, Volume=

0.381 af, Atten= 0%, Lag= 0.0 min

Primary

4.84 cfs @ 12.14 hrs, Volume=

0.381 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 579.11' @ 12.13 hrs

Flood Elev= 584.71'

=

Device Routina Invert Outlet Devices

577.00' #1 Primary

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.58 cfs @ 12.14 hrs HW=578.97' (Free Discharge)

1=Culvert (Inlet Controls 4.58 cfs @ 5.84 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 4.55" for 25-yr event

Inflow

1.88 cfs @ 12.13 hrs, Volume=

0.149 af

Outflow

1.88 cfs @ 12.13 hrs, Volume=

0.149 af, Atten= 0%, Lag= 0.0 min

Primary

1.88 cfs @ 12.13 hrs, Volume=

0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.16' @ 12.30 hrs

Flood Elev= 585.40'

Device Routing Invert Outlet Devices

#1 Primary 580.38

15.0" Round Culvert L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.41' TW=581.72' (Dynamic Tailwater)

-1=Culvert (Controls 0.00 cfs)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 4.44" for 25-yr event

Inflow

5.49 cfs @ 12.13 hrs, Volume=

0.435 af

Outflow Primary 5.49 cfs @ 12.13 hrs, Volume= 5.49 cfs @ 12.13 hrs, Volume=

0.435 af, Atten= 0%, Lag= 0.0 min 0.435 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 582.50' @ 12.10 hrs

Flood Elev= 586.35'

Device Routing Invert Outlet Devices

#1 Primary 581.06'

15.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.56 cfs @ 12.13 hrs HW=582.49' TW=581.72' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 4.56 cfs @ 4.08 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 4.47" for 25-yr event Inflow 7.37 cfs @ 12.13 hrs, Volume= 0.584 af

Outflow = 6.78 cfs @ 12.21 hrs, Volume= 0.584 af, Atten= 8%, Lag= 4.5 min

Primary 6.78 cfs @ 12.21 hrs, Volume= 0.584 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 582.10' @ 12.21 hrs Surf.Area= 631 sf Storage= 1.207 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 1.9 min calculated for 0.584 af (100% of inflow)

Center-of-Mass det. time= 1.5 min (778.7 - 777.3)

Volume	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'	459 cf	36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
<u>#7</u>	<u>581.06'</u>	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
	-		Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0 Crest Height

Primary OutFlow Max=6.71 cfs @ 12.21 hrs HW=582.06' TW=579.15' (Dynamic Tailwater)

1=Culvert (Passes 6.71 cfs of 8.10 cfs potential flow)

-2=Orifice/Grate (Orifice Controls 6.71 cfs @ 7.06 fps)

—3=Orifice/Grate (Passes < 5.89 cfs potential flow) -4=Orifice/Grate (Passes < 1.29 cfs potential flow)

-5=Sharp-Crested Rectangular Weir (Passes < 0.20 cfs potential flow)

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Summary for Subcatchment 1S: DA-1 TO CATCH BASINS

Runoff

1.02 cfs @ 12.13 hrs, Volume=

0.081 af. Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfali=7.61"

	A	rea (sf)	CN [Description			
*		7,195	98 i	mpervious			
		7,195		100.00% Im	npervious A	Area	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
	10.0					Direct Entry.	

Summary for Subcatchment 2S: DA-2 TO CATCH BASINS

Runoff

1.40 cfs @ 12.13 hrs, Volume=

0.111 af, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfali=7.61"

_	Α	rea (sf)	CN	Description							
1	*	9,015	98	impervious	mpervious						
•	k	932	74	hsgC grass	hsgC grass, open						
		9,947 932 9,015	96	Weighted A 9.37% Perv 90.63% Imp	ious Ārea	ea					
-	Tc (min)	Length (feet)	Slop (ft/ft	,	Capacity (cfs)	Description					
	10.0					Direct Entry,					

Summary for Subcatchment 3S: DA-3 TO CATCH BASIN IN MAIN DRIVEWAY

Runoff

6.34 cfs @ 12.13 hrs, Volume=

0.501 af, Depth> 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Area (sf)	CN	Description			
*	31,510	98	impervious			
*	7,119	74	nsgC grass, open, some mulch			
*	6,093	72	hsgC wooded, trees			
*	2,258	98	roof			
	46,980	91	Weighted Average			
	13,212		28.12% Pervious Area			
	33,768		71.88% Impervious Area			

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_	Tc (min)	Length (feet)	Slope (ft/ft)	Capacity (cfs)	Description
	10.0			 	Direct Entry

Summary for Subcatchment 4S: DA-4 TO CATCH BASINS

Runoff =

1.33 cfs @ 12.14 hrs, Volume=

0.105 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Α	rea (sf)	CN	Description	<u>L</u>			
*		5,963	98	impervious				
*		4,221	74	hsgC grass	, open			
		10,184 4,221 5,963	88	Weighted A 41.45% Pe 58.55% Imp	rvious Area			
(]	Tc min)	Length (feet)	Slop (ft/ft	,	Capacity (cfs)	Description		
	10.0				·-··	Direct Entry,		

Summary for Subcatchment 5S: DA-5 TO CATCH BASINS

Runoff

4.29 cfs @ 12.13 hrs, Volume=

0.341 af, Depth> 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Are	a (sf)	CN	Description	L		
*	28	3,942	98	impervious		· · · · · · · · · · · · · · · · · · ·	
*		1,482		hsgC grass			
	30	0,424	97	Weighted A	verage		
	-	1,482		4.87% Perv			
	28	3,942		95.13% lm	pervious Ar	a	
<u>(r</u>	Tc L	ength	Slope (ft/ft	,	Capacity (cfs)	Description	
•	10.0					Direct Entry,	

Summary for Subcatchment 6S: DA-6 RUNOFF TO SWALE ON WEST SIDE OF LOT

Runoff = 15.79 cfs @ 12.14 hrs, Volume=

1.244 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

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	Area (sf)	CN	Description			
*	43,513	98	impervious			
*	74,098	72	hsgC wood	ed, trees		
*	12,925	98	roof			
	130,536	83	Weighted A	verage		_
	74,098		56.76% Per			
	56,438		43.24% lmp	pervious Ar	ea	
	Tc Length	Slop	e Velocity	Capacity	Description	
<u>(n</u>	nin) (feet)	(ft/	ft) (ft/sec)	(cfs)	·	

Summary for Subcatchment 7S: DA-7 WESTERLY SLOPE OF OFFSITE

Direct Entry,

Runoff =

10.0

2.80 cfs @ 12.14 hrs, Volume=

0.220 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	<u> </u>	rea (sf)	CN	Description			
*		9,091	98	impervious			
*		13,655	74	hsgC grass	, open		
		22,746	84	Weighted A	verage		······
		13,655		60.03% Per	rvious Area	a	
		9,091 39.97% Impervious Are				rea	
,	Тс	Length	Slope		Capacity	Description	
<u>(n</u>	nin)	(feet)	(ft/ft) (ft/sec)	(cfs)		
1	0.0					Direct Entry,	

Summary for Subcatchment 8S: DA-8 OVERLAND TO LOWER POND

Runoff

0.24 cfs @ 12.13 hrs, Volume=

0.019 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	Description		
*		1,702	98	impervious		
		1,702	-11.5	100.00% lm	pervious A	Area
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	10.0	(icci)	(IVIL	(10360)	(615)	Direct Entry.

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Summary for Subcatchment 9S: DA-9 EASTERLY SLOPE TO OFFSITE

Runoff

=

3.15 cfs @ 12.14 hrs, Volume=

0.250 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	A	rea (sf)	CN	<u>Description</u>					
*		921	98	impervious					
*		13,218							
*		17,194	72	hsgC wood	ed, trees				
		31,333	74	Weighted A	verage				
		30,412		97.06% Per	vious Area				
		921	;	2.94% Impe	ervious Area	a			
	Tc	Length	Slope	,	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.0					Direct Entry.			

Summary for Subcatchment 10S: DA-10 OVERLAND TO SMALL POND

Runoff

0.39 cfs @ 12.14 hrs, Volume=

0.031 af, Depth> 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

_	Α	rea (sf)	CN I	Description						
*		3,852	74	nsgC grass	, open					
		3,852	52 100.00% Pervious Area							
	Тс	Length	Slope	•	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	10.0				7/-	Direct Entry,				

Summary for Subcatchment 16S: NORTH WING ROOF

Runoff

_

1.84 cfs @ 12.13 hrs, Volume=

0.146 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	<u> </u>	rea (sf)	CN I	Description			
*		12,979	98 r	oof			
		12,979		100.00% In	npervious A	rea	
	Тс	Length	Slope	Velocity	Capacity	Description	
<u>(r</u>	nin)	(feet)	(ft/ft)	(ft/sec)	(cfs)	•	
•	10.0			<u>*</u>		Direct Entry,	

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Summary for Subcatchment 17S: DA-11 SMALL AREA OF FIRE LANE TO TRENCH DRAIN

Runoff

0.45 cfs @ 12.13 hrs, Volume=

0.036 af. Depth> 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfall=7.61"

	Area (sf)	CN	Description			
*	2,311	98	impervious	pav		
*	1,026	74	pervious gr	ass		
	3,337	91	Weighted A	verage		
	1,026		30.75% Per	∿ious Area		
	2,311		69.25% lm _l	pervious An	еа	
	Γc Length	Slop	e Velocity	Capacity	Description	
(mi	Q	(ft/f		(cfs)	Besonption	
10	.0				Direct Entry,	

Summary for Subcatchment 18S: NEW BUILDING ADDITION ROOF AREA

Runoff

1.03 cfs @ 12.13 hrs, Volume=

0.082 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Type III 24-hr 100-yr Rainfail=7.61"

A	rea (sf)	CN E	Description			
	7,255	98 F	Roofs, HSC	C		_
·	7,255	1	00.00% In	rea	 	
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
10.0		71			Direct Entry,	 _

Summary for Reach 6R: Swale - runs W to N

Inflow Area =

3.295 ac, 48.37% Impervious, Inflow Depth > 5.06" for 100-yr event

Inflow

Outflow

17.63 cfs @ 12.14 hrs. Volume=

1.390 af

1.387 af, Atten= 2%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

17.27 cfs @ 12.18 hrs, Volume=

Max. Velocity= 4.83 fps, Min. Travel Time= 1.7 min Avg. Velocity = 1.96 fps, Avg. Travel Time= 4.3 min

Peak Storage= 1,782 cf @ 12.18 hrs

Average Depth at Peak Storage= 0.60'

Bank-Full Depth= 1.50' Flow Area= 13.3 sf, Capacity= 106.43 cfs

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4.00' x 1.50' deep channel, n= 0.025 Side Slope Z-value= 5.0 1.5 '/' Top Width= 13.75' Length= 500.0' Slope= 0.0200 '/' Inlet Invert= 573.00', Outlet Invert= 563.00'



Summary for Pond 1P: Northerly POND

Inflow Area = 4.991 ac, 60.62% Impervious, Inflow Depth > 5.27" for 100-yr event Inflow = 26.48 cfs @ 12.19 hrs, Volume= 2.192 af Outflow = 26.54 cfs @ 12.20 hrs, Volume= 2.099 af, Atten= 0%, Lag= 0.5 min Discarded = 0.06 cfs @ 12.20 hrs, Volume= 0.046 af Primary = 26.47 cfs @ 12.20 hrs, Volume= 2.053 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 563.19' @ 12.20 hrs Surf.Area= 2,744 sf Storage= 5,026 cf

Plug-Flow detention time= 23.1 min calculated for 2.076 af (95% of inflow) Center-of-Mass det. time= 7.8 min (791.5 - 783.7)

Volume	Inver	t Avail.Sto	rage Storage	e Description	
#1	559.44	l' 7,5	41 cf Northe	rly Pond from Swale (Prismatic) Listed below	(Recalc)
Elevation (fee	· · · · · · · · · · · · · · · · · · ·	Gurf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	•
559.4	14	0	Ó	0	
560.0		431	121	121	
562.0		1,819	2,250	2,371	
562.7		2,337	1,642	4,012	
563.0		2,585	517	4,529	
564.0	00	3,438	3,012	7,541	
Device	Routing	Invert	Outlet Devic	98	
#1	Primary	562.78	40.0' long x	9.0' breadth Broad-Crested Rectangular Weir	
				0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.	80 2.00
				50 4.00 4.50 5.00 5.50	
				h) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64	1 2.64 2.64
				65 2.65 2.66 2.67 2.69	
#2	Primary	563.30'		Profile 29) Broad-Crested Rectangular Weir	
				0.49 0.98 1.48	
110	D			h) 3.48 3.50 3.48	
#3	Discarded	559,44'	1.020 in/hr E	xfiltration over Horizontal area	

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Discarded OutFlow Max=0.06 cfs @ 12.20 hrs HW=563.18' (Free Discharge)

Primary OutFlow Max=26.28 cfs @ 12.20 hrs HW=563.18' (Free Discharge) -1=Broad-Crested Rectangular Weir (Weir Controls 26.28 cfs @ 1.62 fps) -2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Small Det. Pond

Inflow Area = 1.657 ac, 84.05% Impervious, Inflow Depth > 5.69" for 100-yr event Inflow 8.71 cfs @ 12.21 hrs, Volume= 0.786 af 9.12 cfs @ 12.21 hrs, Volume= Outflow 0.786 af, Atten= 0%, Lag= 0.0 min Primary = 6.07 cfs @ 12.21 hrs, Volume= 0.739 af Secondary = 3.05 cfs @ 12.21 hrs. Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs Peak Elev= 579.32' @ 12.21 hrs Surf Area= 198 sf Storage= 297 cf

Plug-Flow detention time= 0.4 min calculated for 0.778 af (99% of inflow) Center-of-Mass det. time= 0.3 min (779.2 - 778.9)

<u>Volume</u>	Inve	ert Avail.Sto	rage Storage	e Description	
#1	576.2	:1' 4:	57 cf Small D	Detention Pond (Prismatic) Listed below (Recalc)	
Elevatio (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
576.2	1	0	0	0	
577.0	0	56	22	22	
578.0		108	82	104	
579.0		162	135	239	
580.0	0	273	218	457	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	576.21'	12.0" Round	Culvert to Large Pond	
				P, square edge headwall, Ke= 0.500	
				Invert= 576.21' / 575.71' S= 0.0102 '/' Cc= 0.900	
				ow Area= 0.79 sf	
#2	Seconda	ry 579.00'	120.0 deg x 5	5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir	

Primary OutFlow Max=6.06 cfs @ 12.21 hrs HW=579.31' TW=563.18' (Dynamic Tailwater) 1=Culvert to Large Pond (Barrel Controls 6.06 cfs @ 7.71 fps)

Cv= 2.48 (C= 3.10)

Secondary OutFlow Max=2.88 cfs @ 12.21 hrs HW=579.31' TW=563.18' (Dynamic Tailwater) **1.69** fps) **2=Sharp-Crested Vee/Trap Weir** (Weir Controls 2.88 cfs @ 1.69 fps)

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Summary for Pond 3P: CB IN MAIN DRIVEWAY TO ABUTTING LOT

Inflow Area =

1.079 ac, 71.88% Impervious, Inflow Depth > 5.58" for 100-yr event

Inflow

6.34 cfs @ 12.13 hrs, Volume=

0.501 af

Outflow = 6.34 cfs @ 12.13 hrs, Volume=

0.501 af, Atten= 0%, Lag= 0.0 min

Primary

6.34 cfs @ 12.13 hrs. Volume=

0.501 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 580.27' @ 12.13 hrs

Primary

Flood Elev= 584.71'

Device Routing

#1

Invert Outlet Devices

577.00

12.0" Round Culvert L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 577.00' / 571.56' S= 0.0800 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=6.02 cfs @ 12.13 hrs HW=580.03' (Free Discharge)

1-Culvert (Inlet Controls 6.02 cfs @ 7.66 fps)

Summary for Pond 8R: DMH with 15" Drainage Pipe

Inflow Area =

0.394 ac, 94.56% Impervious, Inflow Depth > 5.85" for 100-vr event

Inflow

2.42 cfs @ 12.13 hrs, Volume=

0.192 af

Outflow

2.42 cfs @ 12.13 hrs, Volume=

0.192 af, Atten= 0%, Lag= 0.0 min

Primary

2.42 cfs @ 12.13 hrs. Volume=

0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 583.35' @ 12.31 hrs

Primary

Flood Elev= 585.40'

Device Routing

#1

Invert Outlet Devices 580.38

15.0" Round Culvert L= 177.0' Ke= 0.500

Inlet / Outlet Invert= 580.38' / 579.71' S= 0.0038 '/' Cc= 0.900

n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=581.85' TW=582.54' (Dynamic Tailwater)

--1=Culvert (Controls 0.00 cfs)

Summary for Pond 11R: DMH with 15" Drainage Pipe

Inflow Area =

1.175 ac, 86.86% Impervious, Inflow Depth > 5.75" for 100-yr event

Inflow = 7.10 cfs @ 12.13 hrs, Volume=

0.563 af

Outflow

7.10 cfs @ 12.13 hrs, Volume=

0.563 af, Atten= 0%, Lag= 0.0 min

Primary

7.10 cfs @ 12.13 hrs, Volume=

0.563 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 583.94' @ 12.27 hrs

Flood Elev= 586.35'

Device Routing

Outlet Devices Invert

#1 Primary 581.06

15.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500

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Inlet / Outlet Invert= 581.06' / 580.04' S= 0.0107 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.46 cfs @ 12.13 hrs HW=583.24' TW=582.55' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.46 cfs @ 3.64 fps)

Summary for Pond 12R: DMH 12 OUT TO SMALL POND

Inflow Area = 1.569 ac, 88.79% Impervious, Inflow Depth > 5.78" for 100-yr event

Inflow = 9.52 cfs @ 12.13 hrs, Volume= 0.755 af

Outflow = 8.36 cfs @ 12.21 hrs, Volume= 0.755 af, Atten= 12%, Lag= 4.7 min

Primary = 8.36 cfs @ 12.21 hrs, Volume= 0.755 af

Routing by Dyn-Stor-Ind method, Time Span= 10.00-20.00 hrs, dt= 0.10 hrs

Peak Elev= 583.25' @ 12.21 hrs Surf.Area= 502 sf Storage= 1,721 cf

Flood Elev= 586.31' Surf.Area= 502 sf Storage= 2,130 cf

Plug-Flow detention time= 2.1 min calculated for 0.747 af (99% of inflow)

Center-of-Mass det. time= 1.7 min (778.3 - 776.7)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	579.36'	87 cf	4.00'D x 6.95'H Vertical Cone/Cylinder
#2	579.36'		36.0" Round Pipe Storage
			L= 65.0' S= 0.0038 '/'
#3	579.36'	117 cf	15.0" Round Pipe Storage
			L= 95.0' S= 0.0107 '/'
#4	580.39'	78 cf	4.00'D x 6.23'H Vertical Cone/Cylinder
#5	580.00'	507 cf	4.00'W x 116.00'L x 4.50'H Prismatoid
			2,088 cf Overall - 820 cf Embedded = 1,268 cf x 40.0% Voids
#6	580.50'	820 cf	36.0" Round Pipe Storage Inside #5
			L= 116.0' S= 0.0050 '/'
#7	581.06'	65 cf	4.00'D x 5.19'H Vertical Cone/Cylinder
		0.404.6	

2,134 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	579.36'	15.0" Round Culvert L= 61.0' Ke= 0.500
			Inlet / Outlet Invert= 579.36' / 578.98' S= 0.0062 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.23 sf
#2	Device 1	579.36'	13.2" Vert. Orifice/Grate C= 0.600
#3	Device 2	579.35'	12.3" Vert. Orifice/Grate C= 0.600
#4	Device 2	581.40'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 2	582.00'	4.0' long x 2.50' rise Sharp-Crested Rectangular Weir
			2 End Contraction(s) 3.0' Crest Height

Primary OutFlow Max=8.25 cfs @ 12.21 hrs HW=583.16' TW=579.31' (Dynamic Tailwater)

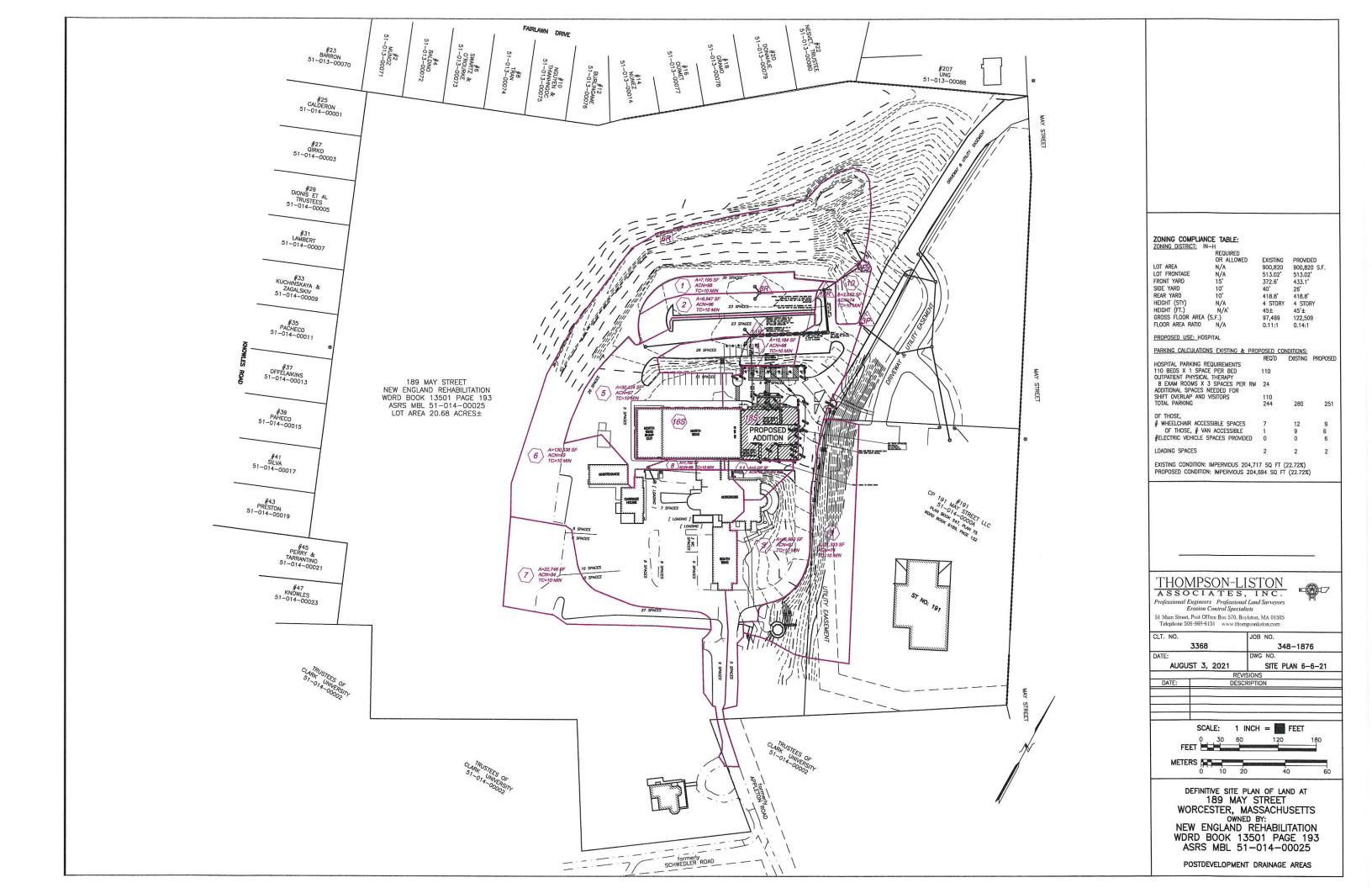
1=Culvert (Passes 8.25 cfs of 10.23 cfs potential flow)

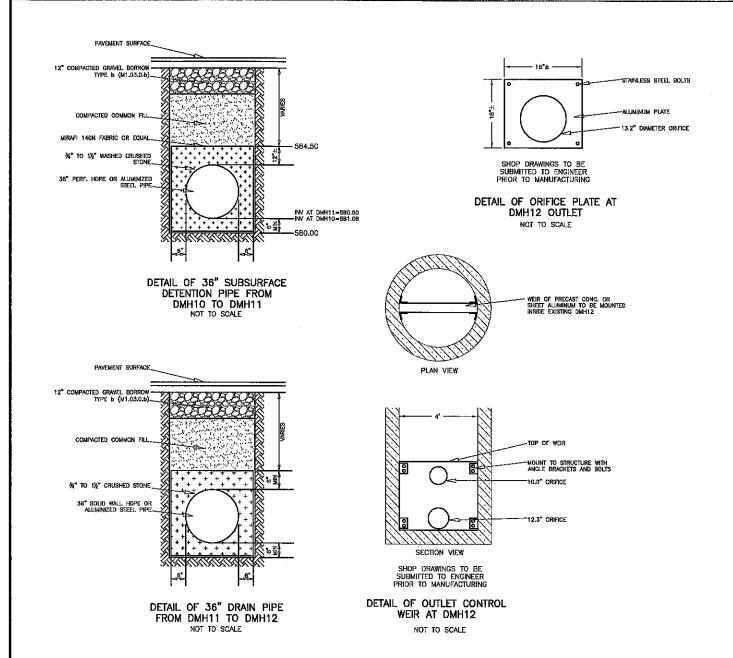
T—2=Orifice/Grate (Orifice Controls 8.25 cfs @ 8.68 fps)

─3=Orifice/Grate (Passes < 7.21 cfs potential flow) **-4=Orifice/Grate** (Passes < 3.04 cfs potential flow)

-5=Sharp-Crested Rectangular Weir (Passes < 16.10 cfs potential flow)







- NOTES:

 1. THE MATERIALS, METHODS, AND WORKMANSHIP OF ALL SEWER, DRAIN, AND WATER PIPES PROPOSED HEREON, INCLUDING ALL WORK WITHIN THE PUBLIC STREETS, TRENCHES AND PAZEMENT PATCHES, SHALL COMPLY WITH THE STANDARD DETAILS AND SPECIFICATIONS OF THE WORGESTER DEPARTMENT OF PUBLIC WORKS.

 2. UNLESS OTHERWISE NOTED, THE CONSTRUCTION MATERIALS DESCRIBED HEREIN REFER TO THE MASSACHUSETTS DOT, HIGHWAYS AND BRIDGES,

 3. PAVEMENT REPAIRS IN THE DRIVE ASLES SHALL BE HOT MIX ASPHALT CONCRETE, TYPE I, 1-1/2" TOP COURSE S\"AGGREGATE, OVER 2-1/2" DENSE BINDER, INTERMEDIATE AGGREGATE. (M3.11.00)

 3. PAVEMENT REPAIRS WITHIN PARKING SPACES SHALL BE HOT MIX ASPHALT CONCRETE, TYPE I, 1" TOP COURSE S\"AGGREGATE, OVER 2" DENSE BINDER, INTERMEDIATE AGGREGATE. (M3.11.00)

 4. FLOWABLE FILL IN ROAD TRENCHES SHALL MEET THE REQUIREMENTS OF THE CITY OF WORGESTER DEPARTMENT OF PUBLIC WORKS.

- DEPARTMENT OF PUBLIC WORKS.

 CEMENT CONCRETE SHALL BE 4,000 PSI, ¾"
 AGGREGATE, MIN 610 LBS CEMENT PER CY
 (M4.02.00)

 REFER TO LANDSCAPE DRAWINGS FOR SOIL
 PREPARATION, PLANTINGS, SEED MIX, AND DENSE MIX
 SURFACING SPECIFICATIONS.

 DRAINAGE PIPE SHALL BE DR18PVC FROM CATCH
 BASIN TO MANHOLE AND REINFORCED CONCRETE PIPE
 ELSEWHERE.
- BASIN 10 MANHOLE AND REINFORCED CONCRETE PIPE ELSEWHERE.

 8. SANTARY SEWER PIPE OUTSIDE THE BUILDING ENVELOPE SHALL BE SDR35 PVC, CONNECTIONS TO EXISTING SERVICE SHALL BE MADE IN THE MANNER AND WITH MATERIALS ACCEPTABLE TO THE
- WORCESTER DPW.

 9. FIRE PROTECTION WATER SERVICE SHALL BE INSIDE THE BUILDING.

 10. DOMESTIC WATER SERVICE SHALL BE INSIDE THE

- 10. DOMESTIC WATER SERVICE SHALL BE INSIDE THE BUILDING.

 11. TRASH AND RECYCLABLES WILL BE STORED IN CLOSED CONTAINERS IN THE EXISTING LOADING AREA.

 12. ALL TREES AND SHRUBS PLANTED SHALL BE ASIAN LONGHORNED BEETLE AND EMERALD ASH BORER RESISTANT VARIETIES.

 13. THE IMPERVIOUS AREA IS APPROXIMATELY XXXXX S.F. IN THE EXISTING CONDITION AND APPROXIMATELY XXXXX S.F. IN THE PROPOSED.

THOMPSON-LISTON ASSOCIATES, INC.

Professional Engineers Professional Land Surveyors Erosion Control Specialists

51 Main Street, Post Office Box 570, Boylston, MA 01505 Telephone 508-869-6151 www.thompsonliston.com

3368 348-1876 DATE: AUGUST 3, 2021 SITE PLAN 6-6-21

DESCRIPTION

DEFINITIVE SITE PLAN OF LAND AT 189 MAY STREET WORCESTER, MASSACHUSETTS OWNED BY:
NEW ENGLAND REHABILITATION WDRD BOOK 13501 PAGE 193 ASRS MBL 51-014-00025